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The OIL WEEKLY

FOR THE DRILLING, PRODUCING, PIPE LINE INDUSTRY

MAY 1 1946

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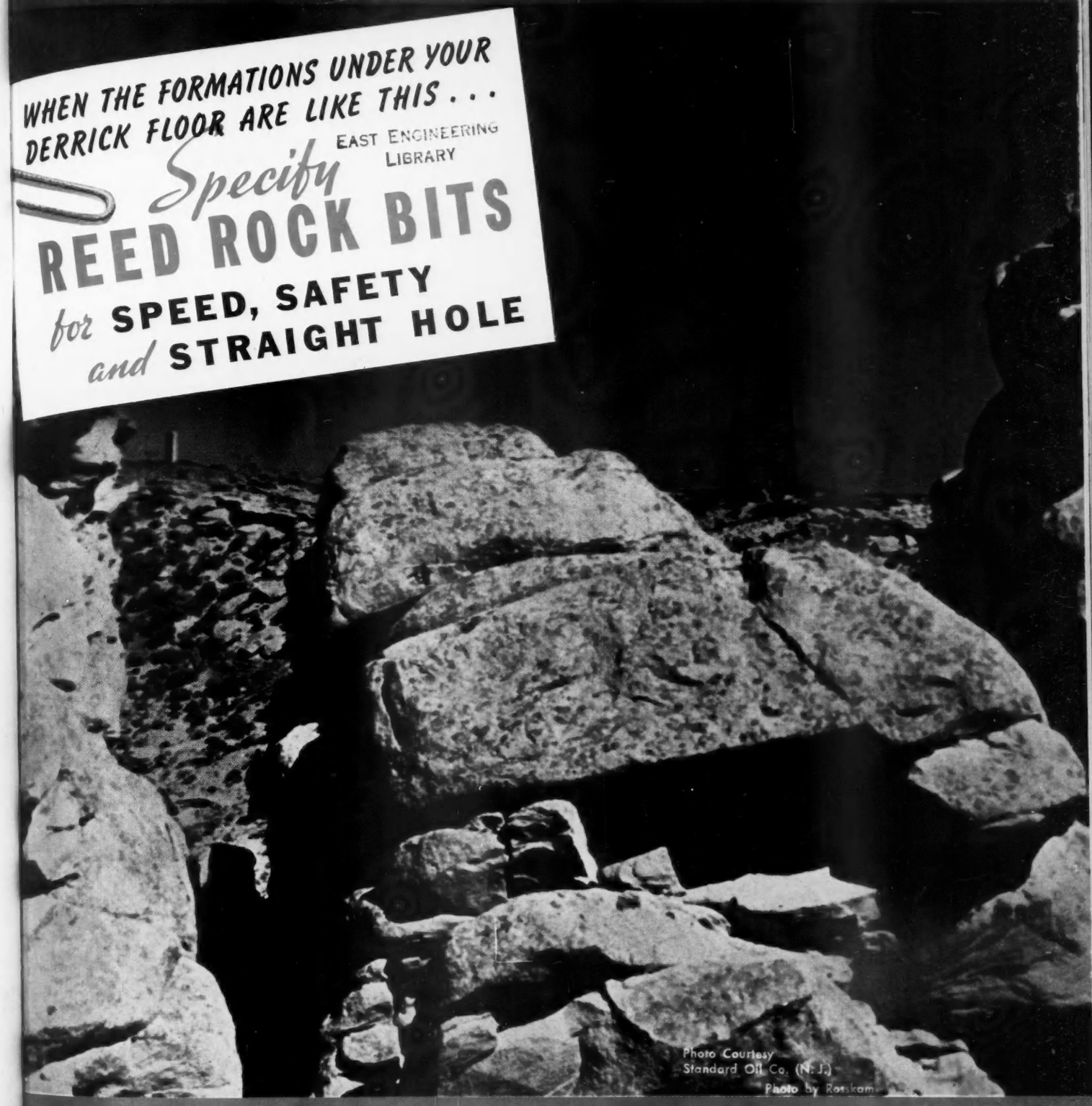

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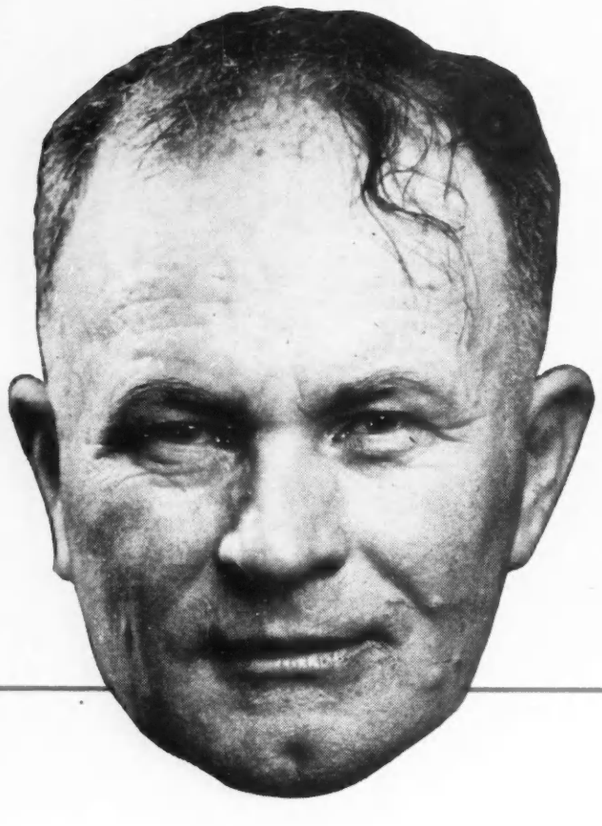
April 29, 1946

VOLUME 121, NUMBER 9



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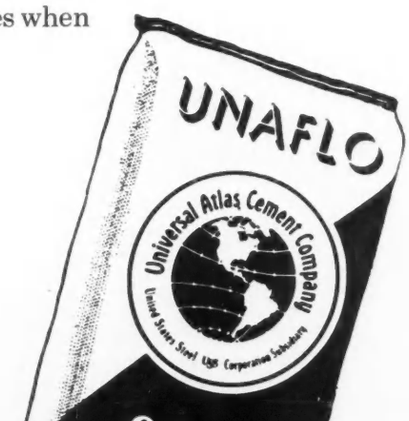

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The OIL WEEKLY

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Looking Ahead

WITH THE EDITOR

AS THE drilling bit is projected deeper into the earth's crust in the search for more oil, it is predicted that a greater number of deep, high-pressure, high-temperature, gas-condensate wells will be discovered. As the reserves of such gas-condensates increase, their importance to the petroleum industry (and the rapidly expanding petro-chemical industry) increases. During the war, the Bureau of Mines, at the request of PAW, made a study of such reservoirs in view of obtaining a maximum of the valuable butanes from the wet gases stored in the sand reservoirs. This study resulted in much information of the natural phenomenon known as "retrograde condensation," which occurs to a great extent in the sands during normal flow.

CYCLING PROBLEMS

In such a phenomenon, a liquid condenses from the hydrocarbon gases in the reservoir when either the temperature or the pressure is lowered. Such condensation in the reservoir represents a loss of unrecoverable and valuable hydrocarbons which are absorbed by the sands. Frank H. Dotterweich and E. O. Bennett present a symposium on the subject in "Trends in Processing Gas Condensate Reservoirs" to appear in THE OIL WEEKLY next week.

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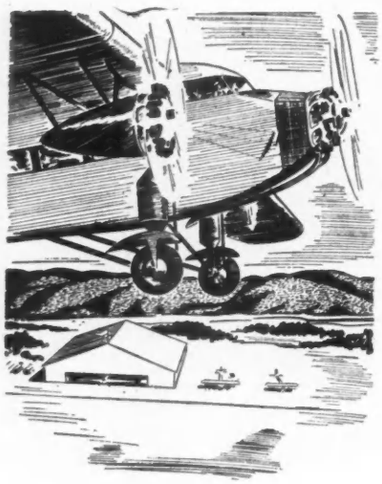

She flew—and how she flew

She was a Model-T... with wings. But she flew... and she flew... and she flew!

Some two decades ago, around 30,000 westerners "took a chance" on an airplane ride in our slick tri-motored Ford because they figured that if we said it was okay, why, it was okay.

The gasoline she flew on was good gasoline for its day. Now it seems as dated as Civil War whiskers.

That old plane and that old gasoline had the same relation to the latest things in aviation that robins have to spring.

Indeed, this spring Pan American World Airways have started a new type of trans-ocean service — using 4-engine, landplane Clippers that not only reduce fares to Hawaii but also cut flying time by half.

This spring both United and Western Air Lines have instituted 4-engine, 44-passenger service — San Francisco to Los Angeles to San Diego—with advances too numerous to mention.

The planes they use don't look much like our original Model-T. And the gasoline which makes such advanced planes possible is just as different. The octane rating shows it's positively whamo-enriched. Both suggest how far we've come with aviation — a tie-up that goes back almost to Kitty Hawk.

For making the very latest strides in aviation our congratulations go to Pan American and to United and to Western Air Lines. But we'd also like to give a small, posthumous salute to our old tri-motored Ford. She flew... and she flew... *and she flew!*

STANDARD OF CALIFORNIA

Russia's Attitude Toward Oil Pact

RUSSIA'S success in getting a hold on the oil resources in northern Iran, plus her dominating position in the five major producing countries in eastern Europe and her own vast reserves, recently estimated by U.S.S.R. at 22 billion barrels, have raised the question in Washington whether the Soviet government will be willing to adhere to the Anglo-American petroleum agreement with its open-door policy.

Although Russia has never evinced any resentment over her exclusion from the negotiations which resulted in the drafting of the agreement, her attitude since the end of the war has been one of insistence on being consulted in any matter involving the other big powers, and there have been suggestions that it was a mistake to ignore her when the talks with England were initiated in 1944, before Russia had firmly entrenched itself in Roumanian and other countries.

Experience since the end of the war has shown that Russia does not intend to permit American or other foreign competition in the countries along her borders where, among other things, she already dominates the oil output of Roumania, Hungary, Germany, Austria, Poland, and Eastern European producers.

Russia's plans for development in northern Iran brings her also into the Middle East picture, where the United States and Britain have been the dominating influences and which is the core of the Anglo-American agreement.

Just how much potential oil Russia has within her own borders has never been estimated, but her reserves are believed to run from the Caspian Sea to the Arctic Coast as well as across Siberia to the Pacific and may be greatly in excess of the most optimistic figures.

While one viewpoint has been that Russia would hang on to her oil so as to use it to political advantage when the rest of the world needs supplies, it is possible that she may develop her reserves with a view to getting into the international trade in competition with the United States and England—particularly if there are indications that atomic energy may become a factor in the fuel situation in the foreseeable fu-

Russia is not to be invited to participate in a world oil agreement until the Anglo-American pact has been ratified by the Senate, but considerable thought is being given the situation even today because of recent developments.

Fourth Prime Mover

DEVELOPMENT of what engineers regard as a fourth prime mover—following the steam engine, the steam turbine and the internal combustion engine—is well in the testing stage at the Naval Engineering Experimental Station at Annapolis, Maryland. The first large stationary gas turbine ever to generate power with a gas temperature as high as 1350° F. was revealed to technical and science editors recently.

Vice Admiral Earle W. Mills, assistant chief of the Bureau of Ships, predicted: "We know that we are on the threshold of a development which, five or ten years hence, will be seen to be as significant as that earlier period when the Navy was engaged in research with ultimately led to the introduction of high pressure, high temperature steam, and high speed diesel propulsion."

The advent of the gas turbine and its perfected features will eliminate the need for boilers, condensers and complicated steam lines commonly associated with present-day steam turbines and steam engines. The gas turbine cycle can be operated at much higher temperature than the practical limitation of 850° F. for shipboard installation, now present in steam turbine construction, the experimenters claim. The successful conclusion of these Navy experiments and tests may be predicted as forerunners to a new era in prime movers.

Sensible Yardstick Suggested to Senate

ALTHOUGH an opinion poll (Gallup) recently showed that 70 percent of the public is in favor of legislation that will restrict activities of organized labor, the Senate apparently is doing little to meet the demand. The Case bill, passed overwhelmingly by the House nearly three months ago, was pretty well trimmed by the Senate Labor Committee because when it emerged it contained only a mediation board plan and a prohibition against interference with shipment of farm produce to market. Three Republican members in a minority report proposed amendments to reinstate the cooling-off period and penalty clauses.

"It has always been an axiom of liberalism that unrestrained and unregulated power in the hands of any individual is dangerous to democracy and freedom," Senators Ball, Smith and Taft said in this report. "Labor unions and their leaders exercise such unrestrained and unregulated power today. The proposals which we are making in these amendments are aimed to be corrective of certain labor practices in the same sense that the anti-trust laws of the early decades of this century were corrective of the abuses of the free-enterprise system. Such measures safeguard real freedom. Our amendments are no more against the true interests of enlightened labor unionism than the Interstate Commerce Commission and the Security Exchange acts were against the best interests of business."

Such a statement should be helpful when the Senate commences debate on the question. Labor hopes various legislative steps will delay the bill until it dies or the public forgets. The Senate, even though it's election year, should carefully and promptly consider the measure and do that which the economic welfare of the nation demands. If such a yardstick is chosen, then the final result need not be feared.

the short life of

SMITH NO. 8

Smith No. 8 was cored in sand from 8000 to 8020 feet. The sand had an oil odor and on the strength of the show in the cores, pipe was set and the well completed.

The well was produced for a short time and the oil rate dropped to 10 barrels per day . . . not enough to be economically produced.

Later Core Laboratories, Inc. made an analysis of the cores from Smith No. 8 and found that the permeability* of the sand was low.

Had Core Lab been on Smith No. 8 to give a derrick floor analysis as cores were taken, the low productivity of the well would have been indicated BEFORE pipe was set.

**Permeability* is a physical characteristic of a formation, the measurement of which is an index to the rate of flow of oil or gas through the formation.

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PETROLEUM RESERVOIR ENGINEERING

The Week's News

PRESSURE both for and against continuance of federal price control continued to mount last week as the Senate Banknig and Currency Committee sought a middle ground between the House bill and the administration's desires. Retention of the House mandatory decontrol provision was demanded by Walter S. Hallanan. Story below.

Lead Shortage—A nationwide lead scrap drive to improve supplies was projected by the government as one means of meeting demands of industry for larger allocations. Oil industry representatives have served notice they will not accept blame for poorer gasoline. Plans for using surplus toluene as a substitute for tetraethyl lead in raising octane value of gasoline developed. Page 12.

Lease Contract Decision—The Supreme Court further clarified the depletion deduction provisions in a decision involving lease contracts on Louisiana oil lands. Page 15.

"Mother Hubbard" Suit—Oil companies involved in the government's "Mother Hubbard" suit have opened negotiations with the Justice Department looking toward a consent-decree settlement. Indications are suit will never go to trial. Page 14.

Public Land Royalty Rate—It took only one month for the new Secretary of the Interior to become involved in controversy over oil. Departmentmental opposition to permanent retention of the 12½ percent royalty on new discoveries on the public lands was attacked by Senator O'Mahoney, and situation will be aired at congressional hearings next month. Page 14.

Tidelands Title Controversy—The Senate Judiciary Committee approved the resolution abandoning federal claims to ownership of the tidelands, leaving the only hurdles the Senate itself, which is expected to pass the measure, and the White House, where Attorney General Clark may bring pressure to bear upon the President to veto the legislation. Meanwhile, the Supreme Court ordered California to boil down its 822-page answer to the government suit. Page 14.

German Oil Production—The postwar downward trend in German oil production appears to have been halted, but output is far from adequate to meet even the severely restricted consumption permitted by the military government. Page 13.

Steel Production Curtailed—The coal strike is beginning to have an important effect on steel production, with industry spokesmen estimating that loss of output may run as much as 1.5 million tons before the strike is settled. Added to the tonnage lost through the steel strike, 1946 production is likely to suffer by 6 million tons or more.

Venezuela Labor Contract—Oil companies operating in Venezuela expect labor to make many new demands, now that their former working agreement has expired. Page 14.

Gas Short Course—More than 800 attended the 21st annual Southwestern Gas Measurement Short Course held at Norman. Page 16.

Formosa Bombing—Engineers report that American bombers did a good job in handicapping Jap refinery operations on island of Formosa. Page 13.

Texas Flare Gas—A committee of operators will be named to study the flare gas situation in Texas and recommend methods of curtailment. Page 12.

Oil Industry Delayed in Presenting Price Control Case to Senate Group

The Senate Banking and Currency Committee definitely was "in the middle" last week, beset on one side by consumers who had been urged by Administration officials to demand that Congress continue the price-control law unchanged and on the other side by industries charging that OPA interference is holding back the production for which the public is clamoring.

So great was the rush of industries to present their case to the Senate, encouraged by the action of the House, that representatives of the oil industry who had been scheduled to appear before the committee were temporarily frozen out. Far behind on its schedule, the committee deferred hearing Russell B. Brown, general counsel of Independent Petroleum Association of America and Frank M. Porter, president of Mid-Continent Oil and Gas Association, but promised they would have an opportunity to present their case before the hearings were closed.

Hallanan's Views

The committee, however, did get the views of the industry from Walter S. Hallanan, president of Plymouth Oil Company and chairman of a special API committee.

Hallanan demanded retention in the legislation of the House provision making it mandatory for OPA to decontrol commodities when supply reaches the 1941 level, and declared that opposition to this provision by the OPA "can hardly be construed in any other significance than that the OPA is determined to continue its wartime power over all American industry."

"The oil industry," Hallanan said, "wants to be done with surveys, studies, reports and questionnaires, and be free to meet the normal peacetime demands of the American people, and at the same time build up the nation's oil reserves in order that we may not become a 'have-not' nation in this one critical material so essential to our economy and our national defense."

Hallanan charged that the present shortage of metallic lead is due to "a demoralized economy" and served notice that the oil industry will not accept responsibility for future low-cost supply of products to the public if OPA controls are continued.

"Petroleum supplies are now ample to meet all foreseeable demands if they are not subject to frozen and unrealistic price structures," he told the committee. "On any yardstick that would measure adequate supplies to take care of all demands, the petroleum industry is ready to meet every test.

"There is no room in a free America for any government control that is exercised for control's sake alone."

Increased Price Seen

Hallanan admitted that decontrol of oil would result in an increase in prices for crude and products, but explained that the additional income would go toward meeting the costs of exploration and if the money is not made available there will be a marked decrease in drilling activities which will result in a short supply of crude within the near future.

However, he said, the oil industry is composed of practical men who are deeply conscious of the ruinous effects of unbridled inflation, and its past history is one of attempting to give the public its products at the lowest possible costs.

Heroy to Speak

William B. Heroy, formerly PAW director of foreign production, will be the oil industry representative on a panel which will discuss our "vanishing" natural resources at the annual meeting of the United States Chamber of Commerce in Atlantic City May 2.

The principal address on the program will be "The States' Interest in Natural Resources," delivered by Governor Robert S. Kerr of Oklahoma, president of Kerlyn Oil Company.

On the panel with Heroy will be spokesman for the coal, water and power, forest products and mining industries.

Flare Gas Group to Make Suggestions to Commission

The East Texas and K-M-A fields are producing a substantial volume of flare gas that no provisions have been made to divert for useful purposes, according to testimony presented by operators at the Texas Railroad Commission's Fort Worth hearing on gas waste in North and East Texas districts.

Flare gas involving residue for the 18 natural gasoline plants in the East Texas field was estimated at 19,585,000 feet daily, while an additional 3 million feet was reported as the daily gas production of 800 oil wells not connected to gasoline plants. In response to suggestions by operators, the commission proposes to appoint a committee of producers, plant operators and natural gas pipe line companies to make a study of the flare gas situation, then recommend methods of curtailment.

Flared gas in the multi-pay K-M-A field represents about 14 million feet out of a daily casinghead gas output of 60 million feet. Testimony revealed that the gasoline plants are processing 58.5 million feet daily, with 9 million feet daily returned to operators for lease operation and 18 million feet daily utilized in repressuring the Strawn horizon. Residue gas sales to pipe lines accounts for 4.5 million feet daily. An effort will be made to induce the gas lines to take additional residue.

The scheduled completion of the Warren Petroleum Company's natural gasoline and repressuring plant in the Hull-Silk field, second largest in North Texas, for July is expected to reduce the volume of flare gas to a nominal level. The field was credited with currently flaring 7 million feet daily, and this gas yields 2 gallons of natural gasoline per 1000 feet.

The combination natural gasoline and repressuring plant operated in the Hildreth field, Montague County, by Continental Oil Company, Sinclair Prairie Oil Company and Daube interests serves 53 of the 131 producing wells. A representative stated that wells served by the plant produce 2,274,000 feet daily, and 1.8 million feet daily is compressed at an average cost of 7 cents per 1000 feet for injection into the 6100-foot conglomerate pay. Plant fuel and lease requirements reduce the volume of flared gas to 349,000 feet daily.

Florida Gets Producer

Humble Oil & Refining Company has established commercial oil production in another Florida test, its Gulf Coast Realties 6, located in the Sunniland Sector, Collier County, making oil on drill-stem tests from 11,450-578 feet. The well made 236.31 barrels of 25.5-gravity oil on a 24-hour drill-stem test using a 3/16-inch choke on the bottom and a 5/32-inch choke at the surface. Gas production was estimated at 17,300 cubic feet, giving a gas-oil ratio of only 70/1. Working pressure at the surface during the series of tests had increased from 265 pounds on the first test to 425.

Would Use Surplus Toluene to Help Relieve Shortage of Tetraethyl Lead

Plans to channel to the oil industry the 15 million gallons of surplus toluene in the hands of the government, for use as a substitute for tetraethyl lead in raising the octane value of gasoline, have been developed by the War Assets Administration.

Under a preferential selling policy which permitted the industry to buy toluene at from 10 to 12 cents per gallon while other purchasers paid 23 to 26 cents, approximately 2.5 million gallons of toluene were disposed of, almost all of it to refiners.

WAA last week froze all sales while it worked out new plans, and on April 30 will begin to receive applications at a flat price of 10 cents per gallon to all buyers. Applications will be received up to May 13, when officials will total up the bids and determine how sales are to be apportioned.

Meanwhile, the Civilian Production Administration is considering issuance of a directive to channel the entire government supply of toluene to the refining industry, both to alleviate the lead shortage and to prevent interference with the normal market for coke-oven toluene, which sells at a higher price.

Whether the directive will be issued before WAA disposes of its stocks will depend upon when Senator Joseph C. O'Mahoney of Wyoming returns to Washington. O'Mahoney is chairman of the Senate Small Business Committee, which severely criticized the handling of toluene sales on a two-price basis.

Nation-Wide Lead Scrap Drive Now Being Planned

A nation-wide lead scrap drive reminiscent of the wartime rubber salvage drive conducted for the government by the oil industry was in process of formulation last week as part of the Administration's drive to improve the lead situation.

At the same time, various government agencies conducting foreigin operations were ordered by Reconversion Diriector John W. Snyder to exert every effort to attract more foreign lead to this country, and steps were taken to bring about the shipment of 15,000 tons of lead recently discovered in Japan.

The current allocation of 10,500 tons per quarter to the Ethyl Corporation for the production of tetraethyl lead for gasoline is only 2500 tons above the wartime allowance of 8000 tons a quarter, but at that time only about 75,000 barrels per day of the total civilian gasoline was premium grade whereas consumption now is running about 800,000 barrels daily, it was pointed out.

The present allocation was held to be dangerous to our transportation system, experience during the war showing the motor equipment functioned very inefficiently and broke down at an alarming rate because of the law quality of gasoline. If serious deterioration of transportation is to be avoided, it was represented, metallic lead allocations for May and subsequent months must be at least 4000 tons. Even with that amount, it would be necessary to impose an 80-octane limitation on leaded gasoline.

IPAA Directors Holding Mid-Year Meet at Houston

The mid-year meeting of the board of directors of the Independent Petroleum Association of America will convene in a three-day session in Houston April 29 at the Rice Hotel. Major B. A. Hardey of Shreveport, La., president of the association, estimates that 500 oil men from all sections of the nation will attend.

The opening day session will be devoted to an oil trade association panel on "Working Together on National Problems" with H. J. Porter of Houston, president of the newly-organized Texas Independent Producers and Royalty Owners' Association, presiding.

An open forum on the price of crude oil will highlight the April 30 session. Glenn H. McCarthy of Houston, chairman of the statewide committee of independent oil producers, will preside and talks on "Evils and Abuses of the OPA Oil Policy." J. V. Brown, petroleum analyst and economist of the IPAA, will discuss "Industry and OPA Position on Replacement Costs." George J. Frey, New York, national sales manager of The Ethyl Corporation, will talk on "The Effect of the Lead Shortage on the Independent Oil Producer."

Dr. Waldo Stephens, Oklahoma City, former professor of international affairs at Columbia University and an observer at the United Nations conference at San Francisco, will be the speaker at the dinner meeting Tuesday.

Wednesday's session will include talks on "Balance of Supply with Demand" by Charles F. Roeser, Fort Worth; "Forecast" by Minor S. Jameson, Jr., IPAA economist; "The Import Situation," by Wirt Franklin of Ardmore, Okla., and "Cooperation with the Interstate Oil Compact Commission" by Earl Foster.

J. P. Evans, Jr., Jackson, Miss., will preside at Wednesday afternoon's session when a talk on "Fight or Die" will be given by Walter S. Hallanan, president of Plymouth Oil Company, and treasurer of the National Republican Committee.

Ask Hughes Election

Early government action on the petition of Independent Metal Workers Union No. 1 for a bargaining election at the plant of the Hughes Tool Company, Houston, was forecast last week by T. B. Everitt, president of the union, following a conference with NLRB.

Engineers Tell of Oil Installations on Formosa

Dr. Gustav Egloff and William B. Shanley, of Universal Oil Products Company have returned from a three-month survey mission to Formosa, under the auspices of the Chinese National Resources Commission, and report the success attained by American airmen in bombing Jap installations of a large-scale refinery there.

The refinery, at Takoa, had been constructed as part of a project to manufacture fuel oil for the Jap navy and aviation gasoline for the air force, but through incessant precision bombing by the Americans, it had never been operated effectively. Refinery construction, and instrumentation of the units, were found to be an almost exact copy of American equipment and practice.

Built-In Caves

Half Cut Mountain, which has a nearly perpendiciular face, is honeycombed with caves which concealed and protected various units. One cave contained a small catalytic cracking unit designed to make aviaition gasoline from oil derived from cypress trees. Other caves housed well-equipped research laboratories. One small distillation unit was recessed into the face of the mountain and so camouflaged that it was never struck by a bomb.

The Universal engineers also found an isooctane unit to produce aviation motor fuel from butyl alcohol produced by fermentation of cane juice and soy bean oil. Butyl alcohol was dehydrated to butylene, then isomerized over a clay catalyst to isobutylene, which was polymerized to isooctene and hydrogenated to isooctane of 94-octane rating or better, for blending in aviation gasoline. The Japanese were believed to have used no aviation gasoline of better than 91-octane number.

The engineers report that while insignificant oil production has been developed by the Japs, they had succeeded in industrializing the island to a large extent.

South Pacific Air and Oil Facilities Are Being Sold

The Navy Department has disposed of $25 million worth of air and petroleum faciliities and other property in the South Paciific, principally to the New Zealand and Netherland East Indies governments, but still has nearly $4 million worth left.

The largest single remaining air and petroleum facilitiies to be disposed of are on Noumea, New Caledonia, and represent an investment of $1,628,577, but other facilities remain on French Bora-Bora Island which cost $815.035; fuel storage and distribution at Noumea, $122,500; and combined air and petroleum facilities on Espiritu Santo, $539,025; Viti-Levu, Fiii Islands, $281,-410; Guadalcanal, $300.000; Russell Islands, $140.100, and Ellice Islands, Funafuti, $109,000.

Germany's Oil Production Downward Trend Halted, Jap Capacity Disclosed

The War Department last week released reports from the United States military governments in Germany and Japan touching upon the oil situation in those areas.

The report from Germany disclosed that although a downward trend had been predicted for indigenous production and there was a noticeable decline in output in December, the movement was halted at the turn of the year, at least temporarily, and January production registered a slight gain, reflecting a drilling program undertaken in the British zone.

However, both refinery output and shipments of refinery products declined appreciably in January, with nearly all of the drop confined to the British zone. Liquid fuel allocations in the U. S. zone are met chiefly from Army stocks, which supplied 71 percent of the total in January against 65 percent in December.

The aggregate production of German oilfields in January was 54,122 metric tons (378,854 barrels) an increase of 1.4 percent over the precedinig month resulting from a gain of 2929 tons (20,503 barrels) in output in the Hanover area in the British zone, where it is planned to drill about 45 infillers and 15 extension wells in existing fields and to p 19 hitherto untested salt domes by wildcat wells.

January liquid fuel requirements in the U. S. zone were reported as 32,902 tons (213,863 barrels), an increase of 6305 tons (40,983 barrels) over December, but provisional allocations called for only 28,252 tons (183,638 barrels), leaving a deficit of 4650 tons (30,225 barrels).

Production of crude and refined products from Kerogen shale at Messel, in the U. S. zone, increased slightly in January, the former by 49 tons to a total of 1110 tons, and the latter by 49 tons to a total of 969 tons. At Balingen, in the French zone, about 450 tons of retorted green shale oil was produced, suitable for use as tractor fuel without further processing.

Total reported shipments of refinery products in January were 46,119 metric tons (345,892 barrels), a decline of 24 percent, from the December total. The greatest part of the drop, it was reported, occurred in the British zone, where shipments decreased by 13,844 tons (103,830 barrels), or 29 percent, from the December level of 47,258 tons (354,-435 barrels).

From Japan it was reported that approval has been given for the repeal by the Diet of the petroleum industry law, synthetic oil industry law and the petroleum monopoly law, but plans for the orderly dissolution of the control associations and control companies and for their replacement by public agencies to exercise necessary functions have not yet been worked out.

Synthetic Production

The present capacity of the Japanese synthetic petroleum industry was estimated at 35,000 to 40,000 kiloliters (293,-650 to 335,600 barrels) of synthetic crude a year, but because of the shortage of coal only two plants, located in Hokkaido near the coal fields, are producing. The Takikawa plant of Nippon Jinzo Sekiyu is producing about 50 kiloliters (420 barrels) of 40-octane fuel a day, and the Rumoi plant of the same company is operating on a small scale. Synthetic fuel plants were allotted 70,-000 tons of coal for the last quarter of 1945, but did not get it, and there is no immediate prospect of obtaining coal except for those plants located at or near coal mines, it was stated.

The rubber industry has been allotted 7590 tons of natural crude rubber, but due to the shortage of gasoline and benzol as solvents and coal as fuel is not expected to be able to produce much over 50 percent of scheduled civilian goods. The synthetic rubber industry, with an annual capacity of 750 metric tons, actually produced only 220 tons in 1944, and is not now operating because production costs are prohibitive.

Maritime Commission Seeks Sound U. S. Merchant Fleet

The Martime Commission last week prepared to sell its war-built tankers under the provisions of the Ship Sales Act of March 8, with a view to re-establishing a "privately-owned American merchant fleet composed of modern vessels able to meet all normal competitive standards.

The carriers are being offered at prices fixed in the act, 87½ percent of the 1941 cost, with adjustments under which some tankers may be acquired at 50 percent of the war cost.

Vessels will be sold on the basis of applications to the commission, which will observe certain preference requirements of the Ship Sales Act, including preference of citizens over non-citizens and consideration of an applicant's wartime tonnage losses.

The commission also is prepared to consider applications for the charter of vessels.

The commission's official construction record from the delivery of its first vessel February 6, 1939, to the end of 1945, shows 827 tankers and oilers of various types, of 12,197,188 deadweight tons. During the nearly seven years 558 standard tankers aggregating 9,370,236 deadweight tons and 85 private tankers aggregating 1,325,128 deadweight tons were delivered, together with 72 Navy oilers and tankers of 688.253 deadweight tons, 62 emergency tankers of 669,600 tons. 47 coastal and inland tankers of 136.571 tons and three small tankers of 7400 tons.

Continuance of Incentive Lease Terms On Public Lands Urged by O'Mahoney

Senator Joseph C. O'Mahoney of Wyoming last week reminded Secretary of the Interior Julius A. Krug that although the fighting has stopped, these are not normal times and the need for encouragement to promote discovery of new oil deposits was never greater.

O'Mahoney was urging that the Interior Department reconsider its report opposing permanent adoption of the emergency provision for a flat 12½ percent royalty on new discoveries on the public lands, which he will urge upon the Senate Public Lands Committee at hearings May 7.

The Senator said there are 253,200 acres of possible oil area in New Mexico, Wyoming, Montana, California and Colorado, of which 25,570 acres are in the public lands. Since 1939, he said, 119 new discoveries have been made on 128 public land leases in those states and, he pointed out, Under-Secretary of the Interior Oscar L. Chapman testified before the Special Senate Petroleum Committee last June that the emergency royalty legislation had resulted in possibly 45 new discoveries on the public lands, providing an increase in the public land reserves conservatively estimated at 85 million barrels.

He charged that the department's report on March 15, last, recognized the increased cost of exploratory work and the greater difficulty in locating prospective pools in areas where the subsurface geologic features cannot be interpreted from exposed formations, then disregarded those considerations to contend that the need for encouragement of exploration in normal times "is not apparent" and continuance of the reduced royalty rate is not justified.

"The United States cannot now fail to do everything in its power to promote the search for new oil deposits within its own boundaries, so that come what will upon the international scene, it will not be dependent upon any foreign source of oil," O'Mahoney wrote. "We cannot afford to risk either industrial or political leadership, and both are closely associated with the maintenance here in the United States of ample oil reserves.

"It would be a grave mistake, it seems to me, for the Department of the Interior, as the trustee of the public domain, to act as though it were the proprietor of this area interested only in securing the maximum royalty rates," O'Mahoney declared. "Refusal to grant incentives and insistence upon high royalty rates on both proven and unproven lands could easily be a disastrous policy. No one could reasonably object to the assessment of the normal royalties on proven lands, but upon lands which are actually not proven oil lands, regardless of their location, I feel convinced that the government should hold out an inducement by way of a flat royalty in order to stimulate exploration."

Experts to Negotiate on Big Inch Disposal Plans

The War Assets Administration is preparing to send out pipe line experts with a view to furthering negotiatioins with companies interested in the Big Inch systems and shortly thereafter is expected to invite formal bids for purchase or lease.

So far, the only offers WAA has received have come from Big Inch Lines, Inc., offering $80 million for the combined system, and Transcontinental Gas Pipelines, Inc., offering $40 million, but a number of proposals have been made on a tentative basis, and the field trip is designed to develop whether any of these can be whipped into concrete shape.

The lines are expected to be formally declared surplus in the near future by the Office of Defense Plants, clearing the way for their disposition.

Companies in Venezuela Await New Labor Demands

Oil companies operating in Venezuela were expecting monetary presentation last week of a scale of drastic new demands by the congress of labor syndicates. Indications were that most provisions of the petition being drafted by the syndicates would be unacceptable to the companies and would lead to protracted negotiations. Latest labor contracts in this second producing nation of the world expired April 19.

Demands understood to be under consideration by the syndicates include:

Approval of a nation wide contract under which all labor would operate.

Identical pay and other benefits for nationals and foreigners engaged in the same kind of work.

Reduction of the normal working week from 48 hours to 44 hours, with full payment for a full 48 hours and the same payment for the seventh day in the week, when no work is done.

Overtime pay hike from the present 25 percent to 50 percent.

Double pay for vacations.

Double pay for night work between 8 p.m. and 6 a.m., regardless of whether it is actual overtime work.

Housing accommodations for bachelors, with each man to occupy a separate room.

No mention has yet been made of a demand for an increase in the basic hourly wage, although observers did not overlook a possibility that such a demand might be forthcoming when the petition is presented.

Texas Hearing

The Texas Railroad Commission has scheduled its next statewide hearing for May 17, at Austin.

Out-of-Court Settlement Talked for Mother Hubbard

Preliminary discussions which may lead to consent-decree settlement of the government's "Mother Hubbard" suit against the oil industry and the American Petroleum Institute have been initiated between a negotiating committee of oil-company attorneys and officials of the Department of Commerce.

The oil group already has had a meeting with Attorney General Tom C. Clark for a general discussion of the matter and an outline of the government's position, and has also met with a negotiating committee from the antitrust division at which, however, no concrete proposals were advanced by either side. The industry committee, however is expected to return to Washington soon for another round, at which tentative steps may be taken toward drafting concrete proposals.

Personnel of Committee

The departmental committee has a varying membership, ranging from three to seven, and is headed by Ernest L. Meyers, chief of the consent decree section. The industry committee which came to Washington was headed by James Cosgrove of Continental Oil Company, and included Charles Thompson, The Atlantic Refining Company; Buel Jones, Standard Oil Company (Indiana); Rayburn Foster, Phillips Petroleum Company; Oscar Dorwin, The Texas Company; Carl Keiser, Socony-Vacuum Oil Company, and Edward Hall, Standard Oil Company (New Jersey). P. O. Settle, Gulf Oil Company, and David Searles, The Pure Oil Company, also are members, but did not attend.

Senate Committee Approves Tidelands Title Measure

Congress is now one up on the Supreme Court in the slow race to see which will decide the tidelands issue.

Without acting on the Department of Justice motion to toss out the 822-page answer filed by the State of California to the government's petitioin January 28, the court ordered State Attorney General Robert W. Kenny to submit a "succinct statement" of his position on off-shore oil lands by May 6.

The Senate Judiciary Committee meanwhile, by a vote of five to four, tentatively approved the resolution already passed by the House, surrendering to the states all federal claims to the underwater lands. The committee later polled its absentees and announced approval of the legislation by a vote of eigiht to six.

The committee is expected to send the measure to the floor with a recommendation for passage in the near future, and favorable Senate action will settle the matter finally. Proceedings in the Supreme Court are still in their initial stage and, since the court has suspended the hearinig of arguments for the 1945-46 term, there is no chance of the case being heard before next winter, if it is then still alive.

Depletion Deduction Provisions of Tax Law Further Outlined in Court Ruling

The Supreme Court last week held that the Commissioner of Internal Revenue and the lower courts erred in ruling that receipts from oil production turned over by a grantee to the grantor of production rights was income to the former on the theory that they represented capital investment and were a part of the cost of the lease.

The case came before the court on appeal from the Fifth Circuit Court of Appeals by the Burton-Sutton Oil Company, Inc. It involved the production of oil in Louisiana under a lease originally granted by Cameron Parish School Board to S. W. Sweeney, whose rights were acquired by the Gulf Refining Company.

Under the contract, Burton-Sutton Oil Company was required to pay to Gulf 50 percent of the proceeds of the oil produced and sold from the land, after deduction of certain itemized expenses. The operating company deducted the 50 percent payments from its income from the oil sold from the property and, before the commissioner and the Tax Court, claimed that Gulf retained an economic interest in the oil in place to the extent of the payment.

In a 6-to-2 decision, the court disagreed with the government's contention that "ownership of a royalty or other economic interest in addition to the right to net profits is essential to make the possessor of a right to a share of the net profit the owner of an economic interest in the oil in place."

Reed Delivers Decision

"To let the character of the net profit payments turn wholly on the ownership of a royalty of some sort by the one who received the net profit would make the right to depletion a form of words," Justice Reed said. "No such mechanical application of a national tax act is desirable.

"It seems generally accepted that it is the owner of a capital investment or economic interest in the oil in place who is entitled to the depletion. Whether the instrument creating the rights is a lease, a sublease or an assignment has not been deemed significant from the Federal tax piewpoint in determining whether or not the taxpayer had an economic interest in the oil in place. Nor has the title to the oil in place been considered by this court as decisive of the capital investment of the taxpayer in the oil."

In this case, the court explained, the assignor of the petitioner (Burton-Sutton Oil Company) had an economic interest in the oil in place through his control over extraction. Under the contract with the petitioner, its assignor retained a part of this interest—50 percent of net. Like the other holders of such economic interest through royalties, the petitioner looked to the depletion allowance to return whatever capital investment it had.

"The cost of that investment to the beneficiary of the depletion is unimportant," it said. "It is the lessor's, lessee's or transferee's 'possibility of profit' from the use of his rights over production, 'dependent solely upon the extraction and sale of the oil,' which marks an economic interest in the oil."

While such a transferor may completely divest himself of any interest, economic or otherwise, in the extraction of the oil, there was no intimation of such an act in this case, it was pointed out.

"The assignor, Gulf, in the assignment here involved, required the grantee to drill promptly, to account for production, to pay over 50 percent of receipts, less agreed costs and expenses, and to sell the production on defined terms to grantor, if grantor desired to purchase," Justice Reed said. "Such a transfer of rights to exploit could not, we think, properly be construed as a sale. It is rather an assignment to the operator, petitioner here, of the right to exploit the property with a reservation in the assignor of an economic interest in the oil."

Crude Oil Production in the United States

(Estimates compiled by The OIL WEEKLY. All figures indicate daily averages in barrels.)

STATE OR DISTRICT	PRODUCTION IN WEEK ENDED April 27	April 20
Alabama	1,100	1,100
Arkansas	77,500	77,500
California	861,700	858,400
Colorado	25,700	24,800
Florida	100	100
Illinois	209,300	207,700
Indiana	19,250	20,500
Kansas	257,350	262,400
Kentucky	31,600	31,000
Louisiana	372,100	371,550
North Louisiana	85,300	84,750
South Louisiana	286,800	286,800
Michigan	46,600	48,400
Mississippi	55,200	55,700
Missouri	100	100
Montana	20,100	20,100
Nebraska	750	750
New Mexico	95,900	96,000
New York	13,450	13,700
Ohio	7,200	6,700
Oklahoma	367,150	378,750
Pennsylvania	36,650	37,450
Tennessee	35	35
Texas	2,054,600	2,054,600
Upper Gulf Coast	480,700	480,700
East Texas Field	372,000	372,000
Rest of Eastern Texas	139,700	139,700
Southwest Texas	326,500	326,500
West Texas	495,000	495,000
North Texas	158,700	158,700
Panhandle	82,000	82,000
West Virginia	7,650	8,250
Wyoming	113,900	110,500
Total United States	4,674,985	4,686,085

Total stocks, foreign and domestic, April 20, as reported by the Bureau of Mines were 221,689,000 barrels with a daily average production of 4,686,000 and runs to stills 4,789,000.

Big Natural Gasoline Plant To Be Built at Slaughter

A natural gasoline plant capable of processing 100 million cubic feet of sour gas daily will be erected in the Slaughter field, largest producing area in West Texas, by Stanolind Oil & Gas Company, The Texas Company, Honolulu Oil Corporation and Magnolia Petroleum Company. Stanolind was designated to construct and operate under the guidance of a committee of operators. All lease owners in the 70,000-acre producing area have been invited to participate in the project, which has been under consideration for several years. A portion of the residue gas will be utilized for repressuring on a field-wide basis if a pilot plant now in operation proves successful.

Texas May Allowable Ups Bureau of Mines Estimate

The Texas Railroad Commission's proration order for May fixed an allowable of 2,248,993 barrels per day, 83,974 barrels above the April figure. Only one field, Wasson, was raised on the schedule. It was increased 4800 barrels per day.

The remainder of the increase resulted from raising the number of producing days from 24 to 26. All the large flush fields will produce 26 days.

The Commission estimated that the full allowable should not be produced, that 6.5 percent or 145,873 barrels should be deducted from the estimated calendar day allowable. This results in estimated production of 2,103,120 barrels. To this should be added 177,707 barrels of distillate and natural gasoline, bringing the total estimated to 2,280,827 barrels.

The new figure is 230,827 barrels above the estimate of the demand as made by the U. S. Bureau of Mines 2,050,000 barrels of all oils.

Canadian Oil Production Shows One-Fourth Decline

Canadian crude production in November totaled 658,700 barrels, a decline of 24,100 barrels from October and 23.6 percent under the 861,800 barrels produced in November, 1944, the Department of Commerce has reported.

Output of natural gas, however, increased 22.2 percent from October to a total of 5,298,000,000 cubic feet, well in excess of the November, 1944, production of 4,643,000,000 cubic feet, it was stated.

The department received later figures on Alberta production showing the output of 642,553 barrels of crude oil and natural gasoline from 385 wells in the province in December, compared with 746,449 barrels in the corresponding month of 1944. The natural gasoline production was 39,014 barrels last December against 52,979 barrels the year before. Natural gas production, from 443 wells, was 5,261,914,000 cubic feet against 5,712,767,000 cubic feet in December, 1945.

Southwestern Gas Measurement Course At Norman Attended by More Than 800

By ANTHONY GIBBON, Staff Writer

Expansion of the natural gas industry could not have been more clearly emphasized than by the more than 800 natural gas men who last week attended the 21st annual Southwestern Gas Measurement Short Course, sponsored by the College of Engineering, University of Oklahoma at Norman. Co-sponsors of the course included the Oklahoma Corporation Commission, Kansas Corporation Commission, Arkansas Oil & Gas Commission, Oklahoma Utilities Association, American Gas Association, Natural Gas Section and the Natural Gasoline Association of America.

More than 50 papers were presented, attracting executives and field men alike, the course highlighted problems pertaining to the measurement and regulation of natural gas. Many visitors toured the university's engineering laboratories and witnessed elaborate educational equipment exhibits provided by gas equipment manufacturers.

After C. A. Gibson, chairman of the general committee, called the opening session to order, Dr. G. L. Cross, president of the university, delivered the welcoming address. W. H. Carson, dean of the college of egineering and chairman of the short course executive committee, explained the course was intended to bring those in the natural gas industry together for a discussion of the industry's problems.

Growth of the natural gas industry during the past few years and criticism of some phases of administration of the natural gas act were key points of the principal address given by S. B. Irelan, president of Cities Service Gas Company, Oklahoma City.

Specifically, he referred to the FPC's interpretation of the actual legitimate cost of properties owned by companies engaged in interstate gas business and to the method by which the commission views the value of the rate base and its manner of computing depreciation of physical plant. He also found fault with the commission's interpretation of what constitutes a fair return on investment.

Points Criticized

"The application (by FPC) of its interpretative yardsticks, if continuously and rigidly applied to the natural gas industry, may have a deleterious effect in the industry's ability to supply a continuous and ample service to the consumer over a long period of time," Irelan declared. "Continued application of these standards of measurement of property values, return on investment and the treatment of other more or less intangible business problems, if they are not based on a fair and just consideration, may eventually tend to stifle aggressive expolration for and discovery of new reserves of natural gas. In its interpretation and regulations the Commission must have due and specific regard to the peculiar characteristics of the natural gas industry."

Ranking the industry as a major segment in the national economic structure, Irelan revealed that a total of $6.5 billion are invested in all phases of the natural gas business. Approximately $1.8 billion are invested in natural gas pipe line transmission systems; about $2 billion in producing wells and gathering lines. Domestic consumers have about $1.5 invested in utilization equipment while natural gas distributors have another $1.2 billion invested in facilities.

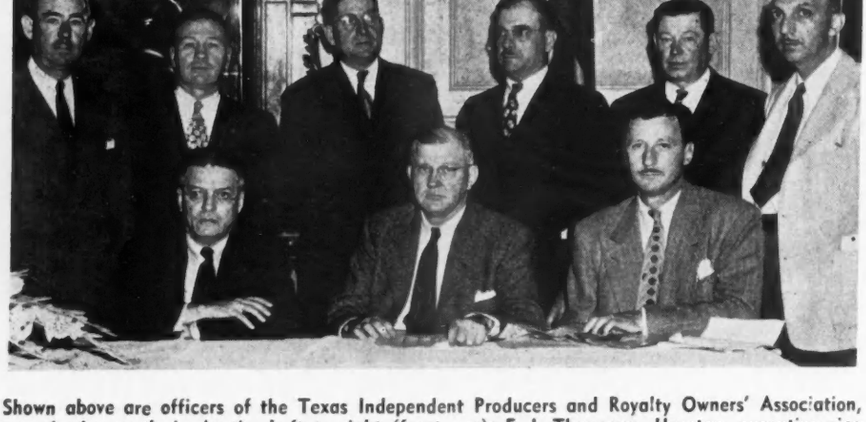
Interesting Exhibits

Speakers and instructors for the sessions and classes were members of the faculty of the University's College of Engineering, representatives of the oil and gas industry, engineers of equipment manufacturers and others directly interested in the measurement and regulation of gas.

Equipment manufacturers presented unusually good exhibits this year. Participating were a score or more companies.

To stimulate interest among those attending the general committee will award seven cash prizes to those writing the best paper on "What I learned at the Gas Measurement Short Course." Papers should not exceed 500 words and should be mailed to Dean Carson at the University of Oklahoma by June 1.

Texas Independents Organize



Shown above are officers of the Texas Independent Producers and Royalty Owners' Association, organized recently in Austin. Left to right (front row): E. I. Thompson, Houston, executive vice president; H. J. (Jack) Porter, Houston, president; Glenn McCarthy, Houston, vice president and executive committeeman; (back row): Walter Henshaw, San Antonio; Bryan Payne, Tyler; A. E. Herrmann, Amarillo; W. W. Lechner, Dallas; W. F. Nenney, Tyler, and Edward G. Kadane, Wichita Falls, all vice presidents and executive committeemen. Other vice presidents and executive committeemen not shown in the picture are: M. D. Bryant, San Angelo; Jake Sandifer, Breckenridge; C. V. Lyman, Midland; C. K. McCann, Victoria; Guy Warren, Corpus Christi; and Arch Rowan, Fort Worth.

Shell Pipe Line Receives Award for Safety Record

Shell Pipe Line Corporation received the "distinguished service to safety" award of the National Safety Council last week in recognition of the company's working 1,788,854 man-hours without a disabling accident. The period covered January 16 to July 30, 1945.

H. H. Anderson, vice president and general manager of the company, received the award on behalf of the concern's 1400 employes.

Shell Pipe Line Corporation last week was also one of 162 coal, metal and petroleum companies in the United States to receive certificates of honor from the Department of the Interior's Bureau of Mines for operating over long periods with few or no accidents. This award covered five years from 1941 to the present time, since the presentations were not given during the war.

Sumatra Rubber Outlook Is Far from Promising

Original plans for the rehabilitation of Sumatra's rubber production, badly neglected during the Japanese occupation because of the even greater supplies available in British Malaya, were seen by the Department of Commerce last week as unlikely of realization of the 150,000-ton output hopes for this year.

Even the 150,000-ton rate, it was pointed out, would still be far short of the 1941 exports of 400,000 tons.

Reconstruction of the Sumatran oil properties of an American company operating there is estimated as costing between $25 and $60 million.

Southeastern Utah Area Shown in New USGS Map

The geology of more than 2000 square miles in the desert and canyon country of southeastern Utah is shown on a new map published by the U. S. Geological Survey.

Covering the region west of the Green and Colorado rivers in Emery, Wayne and Garfield counties, the map shows the distribution of rocks ranging from the Paradox salt beds of Pennsylvania age to the Mancos shale of Cretaceous age. Several wells have been drilled in the area, and survey officials believe it possible that oil, fuel gas or helium may yet be found in commercial volumes, as suggested by showings of oil or gas in wells and seeps at several horizons, especially in Pennsylvanian, Permian and Lower Triassic rocks. Some oil has been produced from the old Goodridge oil field south of the area and both helium and fuel gas have been discovered a few miles to the west in subordinate anticlines on the San Rafael Swell.

Copies of the map, issued as Preliminary May 55 of the Oil and Gas Investigations series, may be had at 40 cents each from USGS offices in Washington, Denver or Tulsa.

Committees Named for API Southwest Production Meet

Committee chairmen were announced last week for the spring meeting May 17-18 in Shreveport, La., of the Southwestern District, Division of Production, of American Petroleum Institute.

Hosts for the meeting, which will be held at the Washington-Youree Hotel in Shreveport, will be the Ark-La-Tex Chapter of the Production Division, of which B. J. Dowd, Union Producing Company, of Shreveport, is chairman.

H. C. Anderson, Texarkla Oil Corporation, Shreveport, is chairman of arrangements. Program chairman is W. V. Vietti, The Texas Company, Houston. Members of his committee are W. F. Rogers, Gulf Oil Corporation, Houston; M. L. Euwer, Union Sulphur Company, Sulphur, La.; W. W. Scott, The Atlantic Refining Company, Dallas; and C. A. Warner, Houston Oil Company of Texas, Houston.

Other committee chairmen are: R. E. Bridges, Humble Oil & Refining Company, Houston, registration; Sam W. Backus, Mid-Continent Supply Company, Shreveport, hotel arrangements; H. L. Kirkpatrick, Arkansas Fuel Oil Company, Shreveport, publicity; W. J. Martzell, Rosenbloom Pipe & Supply Company, Shreveport, entertainment.

API Mid-Continent Meet

W. T. Payne, Big Chief Drilling Company, is chairman of the 27-member general arrangements committee for the spring meeting of the Mid-Continent District, American Petroleum Institute, Division of Production, scheduled June 6-7 at the Skirvin Hotel, Oklahoma City.

Other chairmen are: Wesley W. Moore, registration; W. L. Hunter, hotel meeting room arrangements; Claude V. Barrows, publicity; W. E. Bendler, entertainment. To arrange the program: Harold S. Kelly, Phillips Petroleum Company, Bartlesville; C. N. Copeland, Williams-Copeland Drilling Company, Tulsa; W. L. Horner, Barnsdall Oil Company, Tulsa.

Hotel reservations should be made promptly. Hotels other than the Skirvin are: Biltmore, Huckins, Black and Wells-Roberts hotels.

Department of Justice Watching Oil Companies

The Department of Justice is keeping a monitory eye upon the activities of the major oil companies, it has been disclosed.

Testifying before a Senate Interstate Commerce subcommittee during hearings on the Bulwinkle bill to exempt railroad rates from the antitrust laws, James F. Kilday, special assistant to the Attorney General, charged that independent western refiners who control no truck or water transportation facilities are being blocked out of the southeastern market by a combination of rail and major oil interests.

Kilday told the subcommittee that "the rail combine works with the major oil combine to regulate and maintain what might be called a rate wall" for the purpose of keeping independent refiners in Louisiana, Texas and Arkansas out of the south eastern coastal markets.

Jones New OPA Head For Petroleum Division

Appointment of E. L. Jones to succeed Eugene Uman as price executive of the petroleum price branch of the OPA has been announced.

Jones, who fills a post which has been vacant for some time, joined the OPA in 1943 and prior to coming to Washington was stationed in Chicago, where he was head of the industrial materials section.

Associated with the Illinois oil industry for many years, he was president of Blue Ribbon Oil Company, Deerfield, for 13 years, president of Good Oil Company, Elgin, for five years, and Chicago district manager for Western Oil Corporation for two years.

Munroe Gas Award

Outstanding scientific developments in gas measurement, gas compressors, and research will be among the field of endeavors considered for the Charles A. Munroe Award of American Gas Association this year. The award confers a distinguished honor and substantial cash award on any one who has contributed valuably to the advancement of the gas industry's welfare.

Clifford E. Paige, president of Brooklyn Union Gas Company, is chairman of the award committee.

Applications for consideration by the award committee should be submitted to American Gas Association, 420 Lexington Avenue, New York 17, N. Y., before August 1, 1946.

Unitization Program for Old Ocean Field Likely

Plans for eliminating gas waste in the Old Ocean field, Brazoria County, have been presented before the Texas Railroad Commission. Operators said that a unitization agreement was being prepared which would permit the disposition of most of the flare gas which is now about 13 million cubic feet or seven percent of the total daily production. Of this amount, eight million feet is not stripped before it is flared which means that 135 to 140 barrels of recoverable liquids are being burned.

Magnolia Petroleum Company and J. S. Abercrombie, principal operators in the field, are flaring currently a little over five million feet, all stripped.

The gas being flared may not be accurately returned to the reservoir, although there is a large pressure maintenance program installed in the field.

A study of the field has been made by John Ivy, Houston, and it is expected his recommendations will be followed. These include a unitization program.

The Commission recessed the hearing until May 18.

New Mexico Map

Rock formations along the eastern margins of the Acoma Basin and the southern San Juan Basin of New Mexico are shown in a map recently issued by the U. S. Geological Survey.

The thinning of these rocks toward the west, south and north, and their apparent change to a more sandy facies to the south and west suggest the possibilities of stratigraphic traps at depth, the survey said in reporting the result of studies showing that rocks of Pennsylvania and Permian age are present under conditions that may be favorable to the accumulation of oil and gas in an area of about 575 square miles.

The report, Preliminary Map 47 of the Oil and Gas Investigations series, may be purchased at 60 cents each from the U. S. Survey in Washington, Denver or Tulsa.

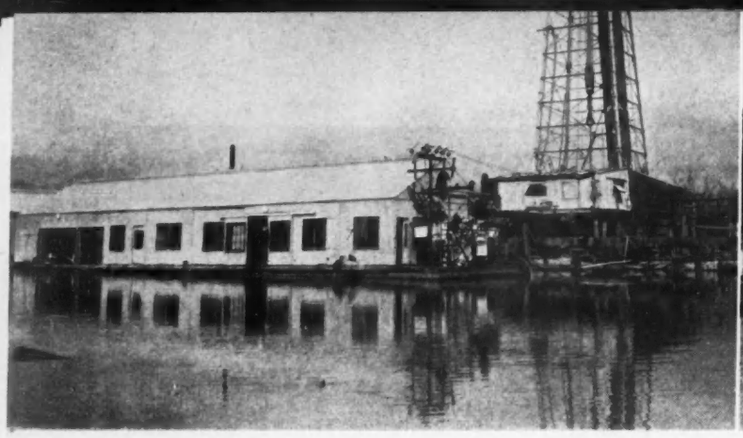
Gas Field Unitization Plan

The Texas State Land Commissioner has approved the first unitization program for operating a lease in a gas field. The state had leased 640 acres in the Sabine River bed in the Carthage field to Glassell and Glassell. To this was added a privately-owned tract of 28 acres and the leases were combined for operating purposes.

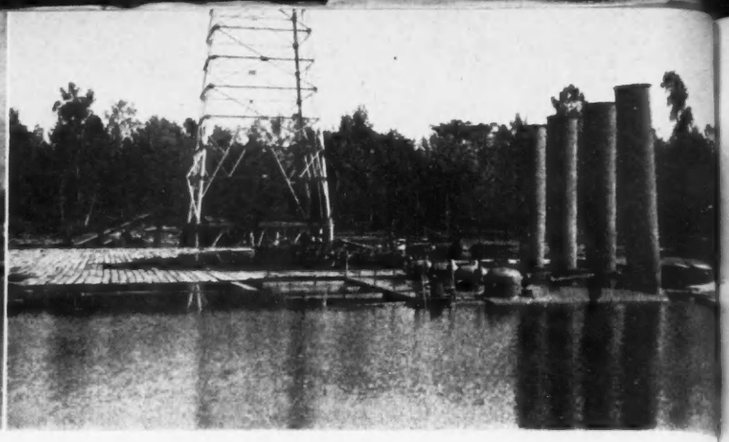
The state is to get ⅛ royalty from all products derived at the processing plant, as well as the gas itself.

Oklahoma Leases Sold

At an Oklahoma state school land commission oil and gas lease sale, Walter K. Jones, Oklahoma City, bid $2 per acre and agreed to start a wildcat within a year on a block of 9895 acres north of Casteneda in Cimarron County, the Oklahoma panhandle. The tracts are in 5n-5eCm and 6n-5eCm.



Electricity is used for power at Bayou des Glaise, with all transformers, pumps, and mud tanks located on a floating barge. When the water level is down, the barge is 30 feet lower than the rig which is built on an island.



First islands were built 28 feet above mean low water level, but were not high enough. With the spring floods, boiler fireboxes were partly submerged and water reached tops of the pipe racks.

Directional Drilling

FROM MAN-MADE ISLANDS

By GORDON B. NICHOLSON, Staff Writer

IN DEVELOPING Bayou des Glaise field, Iberville Parish, Louisiana, Humble Oil & Refining Company has commenced an extensive program which includes the construction of islands elevated above high water level, each designed for directionally drilling four to six wells. The islands offer the most satisfactory sites yet discovered for assuring continuous operations above floodwater levels of the Atchafalaya River, and centralization of several wells on each island by means of directional drilling minimizes island construction and dredging of individual canals.

Original plans did not include directional wells or islands, but circumstances which arose during the exploration before and after the first well was completed brought an evolution of technique to cope with the severe and frequent changes of water level peculiar to the Atchafalaya River Basin. Every well now producing oil at Bayou des Glaise was drilled from an island, and the only vertical hole is the discovery well. Other wells now drilling, already completed, and proposed, are scheduled to be drilled directionally from islands, with the surface locations situated close together in answer to the demands of the swampland. Islands are also built for tank batteries, Christmas trees, and other production installations, and are sufficiently elevated to assure immunity from flood waters.

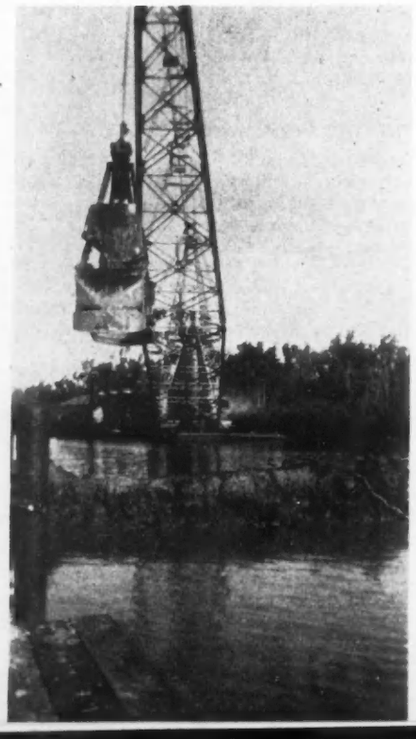
Mean low water level in the Bayou des Glaise field is only about two feet above sea level. However, the flat Atchafalaya Basin, bounded on east and west by levees is fed by waters of the Mississippi River through the Morganza Spillway in times of flood and relieves the lower Mississippi of its burden by providing a vast reservoir between the levees which fills with backwaters from the main channel of the Atchafalaya River. Variations in water level ranging up to the anticipated maximum of 28 feet complicated earlier attempts to drill wells in the field, often resulting in weeks of work being wasted and equipment irretrievably lost.

Present height of the levees opposite the Bayou des Glaise field is 28 feet above sea level, and during time of flood, water fills the entire Atchafalaya Basin to that depth, then spills over the levees into the regions beyond. Projected expansion of the Morganza Spillway system provides for raising the levees to 32 feet, which increases anticipated water depth in the Basin by an equal amount. Although the maximum flood stages occur only a few times in a century, minor floods are a frequent occurrence, and preparations are made for meeting all contingencies without damage.

Early Arrangement

When Humble started drilling in the Bayou des Glaise prospect, rigs were mounted on piling driven into the canal floors. The operations were disappointing in many respects, and all the tests drilled from foundations of this type were failures. High waters often covered the pilings and parts of the drilling equipment, and when crews were able to return to the job after the river receded, it was discovered that the waters which had backed up into the field had left thick deposits of silt and sediment which sometimes filled the canals and covered the piling. The wildcats drilled under these conditions were expensive, with work often interrupted by inundation of the equipment, and long delays entailed while canals were dredged after overflows.

A dredge equipped with a dragline having a 240-foot boom and bucket of 12 cubic yards capacity was used to build Humble's drilling islands at Bayou des Glaise. Spoil dug from the canals and swamp floor was built up to a height of 28 to 32 feet to assure immunity from high waters.



After several attempts to establish production at Bayou des Glaise by drilling from piling, Humble engineers recommended the use of the spoil recovered while dredging canals for building elevated drilling islands to escape the sedimentary deposits and remain perpetually operative by staying above the surface of the water regardless of river conditions. The first island was constructed, Wilbert Mineral Corporation B-4 was spudded on October 6, 1943, and completed as the discovery well of the field on May 27, 1944.

Success of the first well drilled from an island led to construction of additional islands for future drilling, and to lessen expense of rig-building and dredging canals to new locations in the field, it was decided to design islands to accommodate more than one well. The next island built included a surface area large enough for four wells to be drilled directionally, the locations being close together and in a single straight line, with the derrick skidded upon completion of each well. Three wells have been completed on this and the fourth is being drilled. Two larger islands have been constructed for drilling five directional wells from each, with the bottoms planned to radiate outward to provide proper bottom-hole spacing.

Since drilling on the first island, it was discovered that the height adopted was insufficient to prevent flooding, as the

rising backwaters covered the tops of the islands to the height of the pipe racks and into the boilers which were being used on the rig at that time. The last islands are elevated to 32 feet to insure year-round freedom from floodwaters.

The second island constructed was rectangular in shape to conform with the new plan of drilling four directional wells with close surface spacing. Surface area was reduced to a minimum as an economic feature, with all equipment possible being mounted on a floating barge located near the rig for space conservation. The barge houses all the mud pumps and slush and reverse mud tanks, in addition to electrical transformers and pump motors which receive current from a nearby commercial transmission line. Extra mud supply and toolhouse are situated on a small auxiliary barge also located nearby.

The spoil used for islands was lifted from the bottoms of the canals and swamps by means of a dredge equipped with a dragline having a 240-foot boom and a bucket capacity of 12 cubic yards. The heavy mud placed on the islands is self-consolidating under its own weight, and when dry enough, a dragline is used on the island for leveling, at the same time packing the spoil more firmly. The entire top surface of the islands is then boarded over from end to end, furnishing a basic mat for the rig sufficient for all the locations, although a mat made of 12 x 12-inch sills is also used under the derrick and draw works.

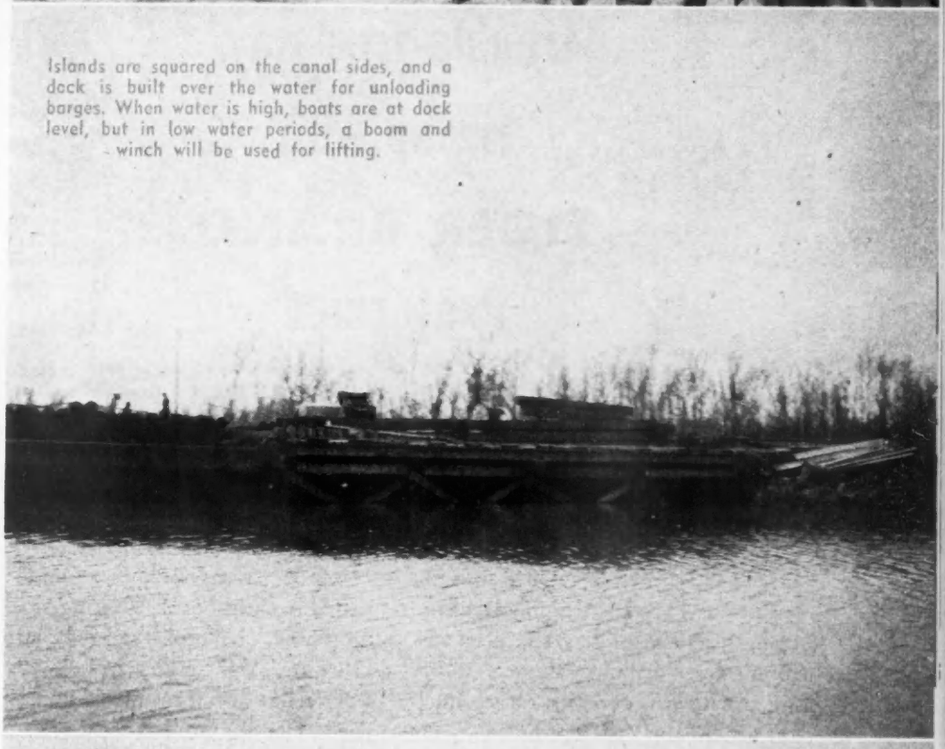
Retaining Wall

On the canal side of the islands a retaining wall is erected to square for constructing a wooden dock. From the wall, stringers are extended over the canal, and flooring is put on for a wooden platform suitable for unloading personnel and equipment. One dock properly located serves all the wells drilled from each island. First location for directional drilling was on the end of the island opposite the dock, with each succeeding location approaching the dock to permit moving equipment or operating vehicles to the rig without hindrance.

On the first directional island, provisions were made for unloading equipment from river craft during all stages of water level, as the canal surface varies from near dock-level to 30 feet lower. To facilitate moving heavy apparatus, a stiff-legged derrick is located on the dock floor, with an electrically-driven winch which is capable of handrling loads of 20,000 pounds. Another structure erected for unloading boats and barges is a wooden ramp which extends down the sloping side of the island into the waters of the canal, suitable for vehiclular use. A short, portable section furnishes an adjustable platform which is moved to conform with the changing canal level, providing a dock extending over the water at a convenient height for unloading equipment on trucks or for driving vehicles from the deck of a barge to the ramp.

Humble utilizes electricity for drilling the Bayou des Glaise wells, receiving power from a transmission line of the Gulf States Utilities Company which passes several miles north of the field. A transformer bank located on the banks of Whiskey Bay Pilot Channel reduces the voltage from 66,000 to 13,000 volts which is the current available in the field, and transformers erected on the pump barge lower the power to 440

After islands are built up and leveled, boarding is placed over the entire top surface. The first directional well is drilled at one end of the island, then the rig is skidded 26 to 30 feet to the next location.



Islands are squared on the canal sides, and a dock is built over the water for unloading barges. When water is high, boats are at dock level, but in low water periods, a boom and winch will be used for lifting.

A wooden ramp for vehicles is built down the sloping side of the island as an aid to unloading. A short, portable section placed on the lower part of the ramp is moved to conform with the water level, extending over the water and used as a dock.

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volts. A converter for changing the alternating current in the line to direct current for use by the rotary motor is located on the barge.

Placing portion of the drilling equipment on floating barges reduces the surface space needed on the islands for conducting operations, but requires the addition of extra appurtenances to compensate for the changing water level. For example, walkways between the rig and the barge are constructed with provisions for the barge to rise and fall with the water level, sometimes being located 30 feet below the top of the island, at other times at nearly the same level. Electric cables from power barge to the rotary and draw works motors are sufficiently long to reach the islands when barge is at low level, which creates a surplus of cable when waters rise.

The main mud line from the pumps on the barge to the rotary hose is flexible to permit changing position, while the mud flow line is equipped with a swivel arrangement for the same purpose. The mud ditch is elevated to an unusual height, as it was discovered that on one well, when water rose to a high point, the mud tank level on the barge was above the top of the island and mud return line sloped uphill to reach the tanks.

Storage tanks, separators, and heaters are also erected on islands built high enough to remain above the flood level, but as extra reinforcement, the tanks are set on piling driven into the dirt of the island and decked over with 3 x 10-inch and 3 x 12-inch fir. Each tank is set on separate decking.

Most canals dredged into the field are 140 feet wide, and are cut to a depth of minus two feet below mean Gulf level. The canal leading into the site of the four directional wells is 3000 feet long. As a single canal will service four or five wells on an island, dredging and maintaining individual canals for each well is averted.

26-Foot Spacing

The first directional wells drilled had surface spacing 26 feet apart, which represents the exact width of the derrick. Upon completion of each well, the derrick was skidded 26 feet with corner supports being placed on the same spots from which the other corner posts had been removed. Special facilities were provided to expedite skidding, including heavy sills placed under the derrick, and a mud ditch which remained in one place during drilling of two wells, a 26-foot section being added when the derrick was moved. Unitized arrangement of mud pits and pumps on the barge also expedited moving the rig.

The holes are drilled as nearly vertical as possible to 6000 to 7500 feet before the first deflection, with depths of setting the first deflecting tool being staggered in each well. Extreme caution is exercised while drilling the upper portion as prevention against contacting other wells drilled due to their proximity, and frequent straight-hole surveys are made prior to reaching the deflecting depth. When the depth selected for setting the first deflecting tool is reached, a surveying instrument is lowered to bottom to ascertain the degree of verticality and the direction of the hole at that point. The first tool set is generally a whipstock, with the principal immediate objective being to attain the direction desired. Subsequent settings of whipstocks and knuckle joints maintain the established direction and gradually increase the angle to obtain the necessary horizontal deviation.

Efforts are made to have direction established prior to reaching 8500 feet, as at that depth the bit reaches the top of a lime formation which is about 900 feet thick. Penetrating into the lime, the bit tends to continue the direction and angle held when it entered the hard formation, and changes of angle and directional alterations are difficult. After reaching the bottom of the lime at about 9400 feet, the normal tendency is to turn toward the dome.

Deflection to the desired objectives in the first three directional wells drilled was accomplished with the setting of only three or four deflecting tools in each, which built up the necessary angles. For deflections of approximately 400 feet horizontally, maximum angles established and maintained ranged between 12 and 16 degrees from vertical. From the time of setting the first deflecting tool, magnetic surveying instruments are lowered into the hole each time the drill pipe is removed, giving frequent observations of direction and angle at various depths.

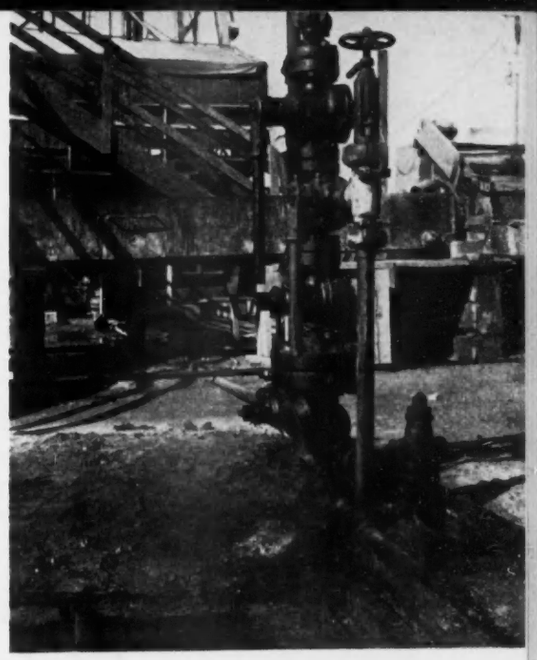
No unusual drilling difficulties are encountered while drilling wells in the field. In general, formations are soft, and fishtail and drag bits are used the entire depth with the exception of drilling through the lime formation which requires the use of rock bits. No high pressures are encountered, but the shale just below the lime tends to cave and requires special attention. Mud weights range from 9.5 pounds used in the upper section of the hole to 9.8 and sometimes 10 pounds to prevent caving of the shale. Mud consistency is inspected carefully, as heavy muds are lost in the upper formations.

Several sands in the field are suitable for commercial production, and the wells are completed by setting 5½-inch casing through all sands and perforating. Production is obtained from the oligocene, and depth of the discovery well is 10,927 feet. Two-inch tubing is used in all wells, and production of the 36.2-gravity oil is accomplished usually with low gas-oil ratios.

More Islands Ready

Two more islands have been completed for directionally drilling wells, and operations are ready to start. Both of the new islands provide for drilling five wells spaced 30 feet apart, which is the distance between corners of the derricks already erected. To facilitate skidding one derrick between locations, it is truss-type, with the four-corner supports carrying the entire load, and the rotary posts eliminated. A base made of tubular steel is built to support the engine section as a step toward unitizing skidding facilities.

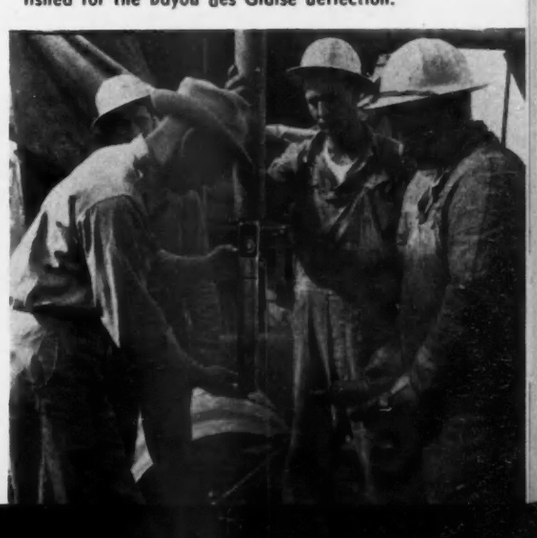
Wells drilled from the two new islands will be drilled according to the same general pattern as the first four directional wells, and like the others, will be aligned in a single row. The mud ditch will be located near the center of the island, and will not be moved during drilling of all the wells, with 30-foot sections either removed from the ditch or added to conform with the position of the derrick. As in the case of drilling on the first directional island, pumps, mud tanks, and other equipment will be located on a barge, to accomplish the dual purpose of expediting, moving the rig, and reducing size of the island.



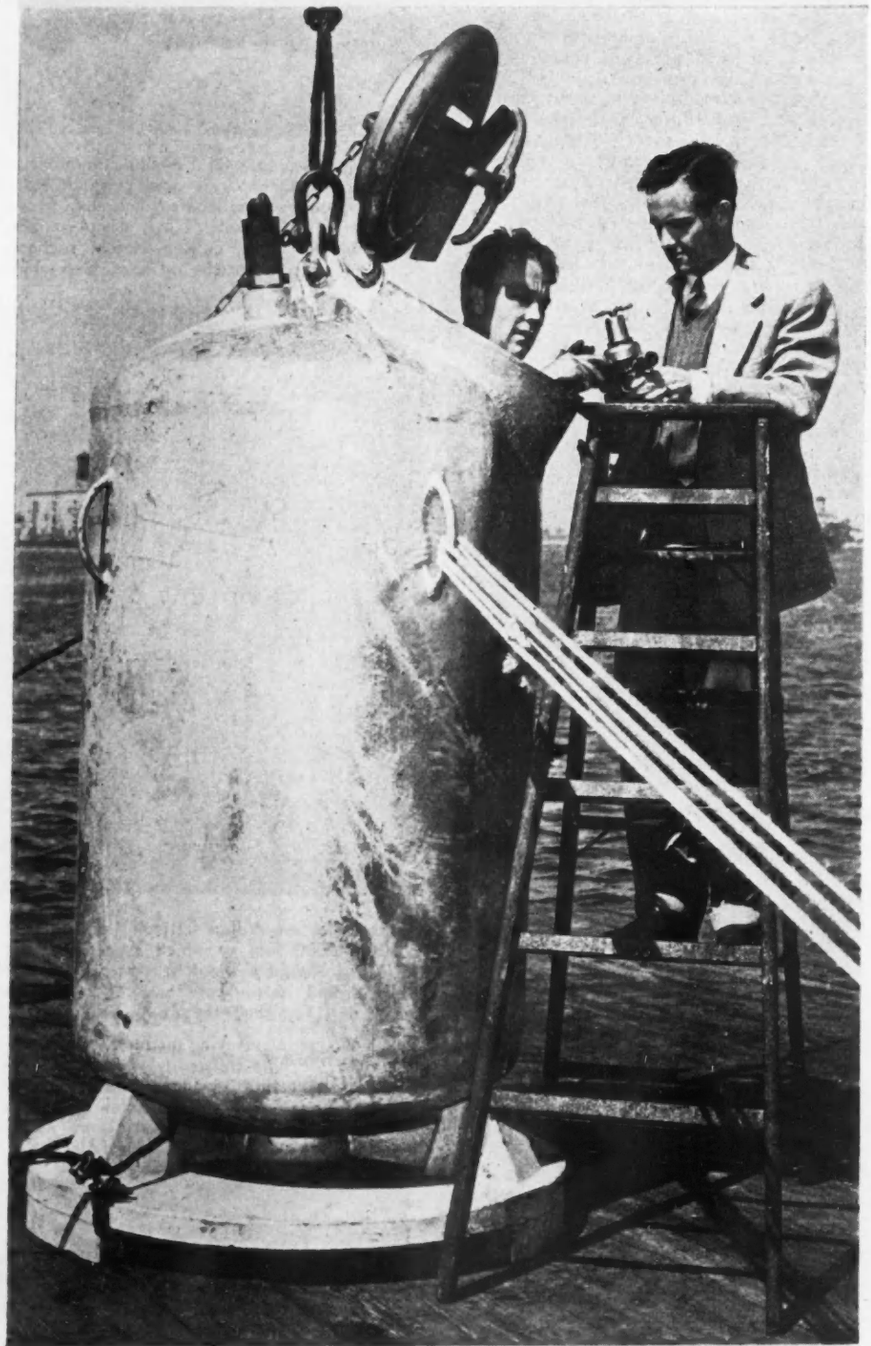
Only 78 feet separate the first directional well from the fourth, which is now being drilled, with two other wells located between. Mud ditch is arranged so that it is not moved during drilling of two wells, only a 26-foot section being added when the rig is skidded.

Above, holes are drilled vertically to depths of 6000 to 7500 feet at which time deflecting tools are used. On the first three directional wells drilled, setting of three or four tools per well furnished the deviation desired.

Below, magnetic surveying instruments are lowered into the hole frequently when the directional drilling starts, giving accurate information on the progress of the hole. Angles as high as 16 degrees from vertical are established for the Bayou des Glaise deflection.



Diving Chamber Permits Gravity Meter Surveys on Ocean Bottom



Diving chamber being readied aboard a barge for one of its initial test dives off the California coast. In an emergency, the two-ton stabilizing weight attached to the bottom may be released by the technician within the chamber permitting cylinder to come to surface.

By GILBERT M. WILSON
Staff Writer

A NEWLY-DEVELOPED steel diving chamber large enough to house an operator, gravity meter, instruments, oxygen and air purifying equipment is slated to be put into operation within the next few weeks by Union Oil Company for use in underwater gravity meter surveys off the Louisiana coast.

Measuring five feet tall and three feet in diameter, the all-welded chamber is constructed of ½-inch steel plate which is heavily galvanized. A round hatchway in the top is provided with rubber-gasketed pressure seal and locking device, the latter capable of being opened from either side.

Two-Ton Weight

A circular two-ton lead weight attached to the bottom provides stability for holding the chamber erect while it is being lowered and while it rests on the ocean floor. In the event of hoisting equipment failure or other emergency, this weight may be released from the inside by the operator merely by turning a handle inside the chamber, and the cylinder will quickly shoot to the surface as a result of its own buoyancy. It is built to withstand pressure at depths in excess of 100 feet. In tests conducted recently off the California coast, the vessel was lowered to 160 feet below the surface with very satisfactory results. In addition, extensive tests have been conducted in the same area at depths of from 25 to 35 feet.

The technician operating the gravity meter sits on a cushioned seat equipped with a safety belt, the latter to prevent his being upset and injured if the chamber should be tipped over in the water, or, if the weight block would have to be released to send the chamber and its occupant bobbing to the surface. In addition to the gravity meter instruments, the chamber is equipped with two-way communication facilities, test apparatus, chemical air purifying equipment and emergency oxygen.

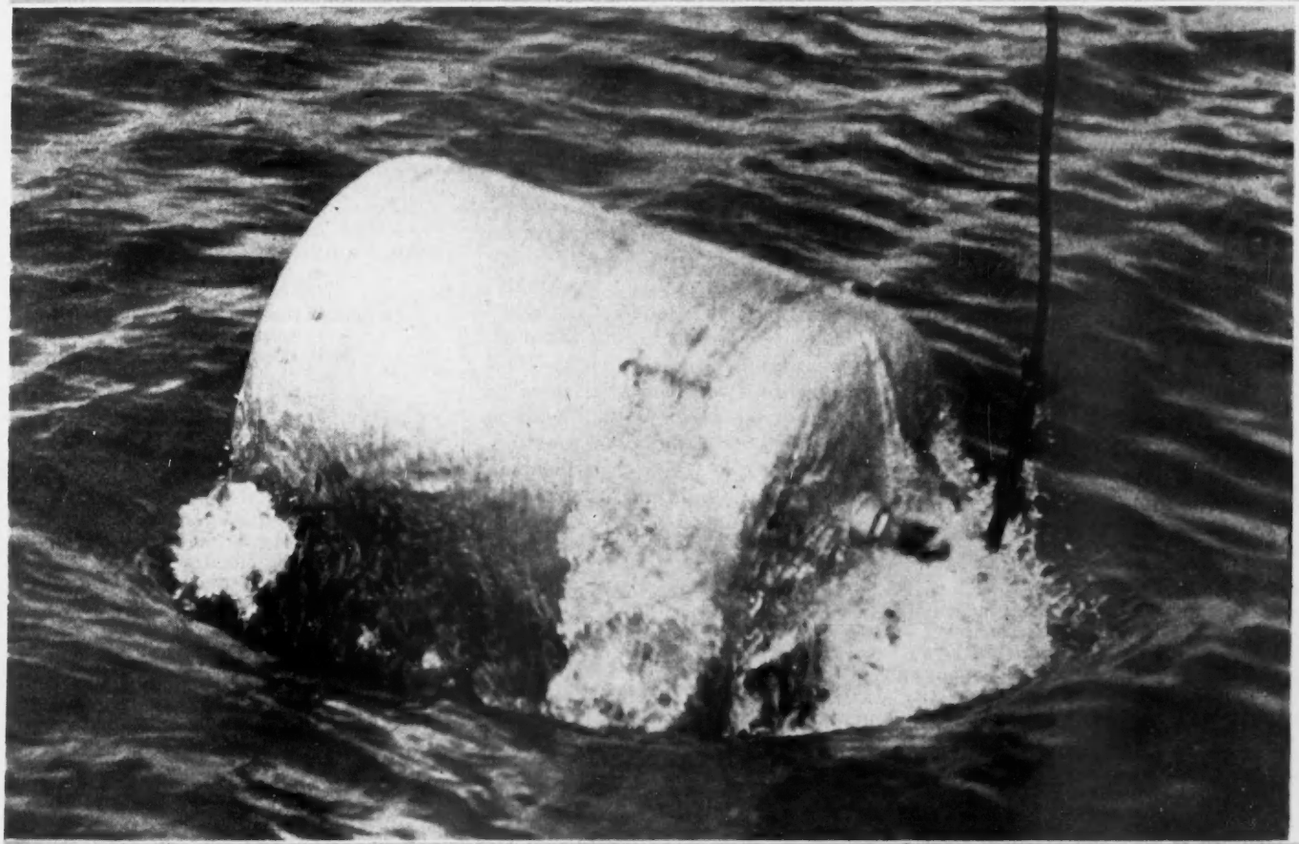
Telephone Equipped

Telephone cable is attached to the outside of the upper surface of the chamber and is independent of the heavy cable with which the chamber is hoisted in and out of the water. Handles welded to the outside of the cylinder provide a means of attaching lines used in stabilizing the unit as it is lowered over the side as well as for grappling when it appears above the surface.

Detection of salt-dome type structures is expected to be simplified through use of this diving equipment which allows the gravity meter to be rested solidly within two or three feet off the ocean floor and for any desired length of time. It is commonly known that salt dome structures currently being drilled, probably continue for many miles off shore, and the diving bell containing the instruments is intended to speed up and greatly simplify the exploration of these possible oil-bearing areas. Comparatively little equipment is required in carrying the device, it being operated from a barge equipped with boom and rigging capable of handling the chamber.

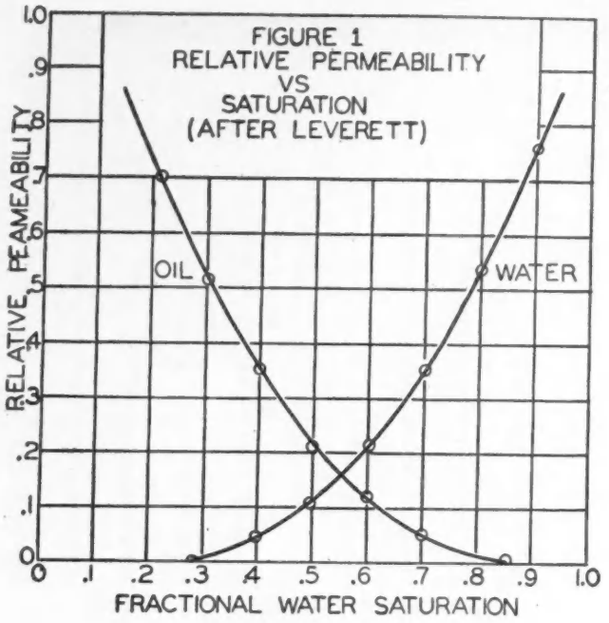
With its man-size hatch sealed against sub-surface pressures, the chamber is being lowered for a test dive. Built to withstand pressures at depths in excess of 100 feet, the cylinder has withstood depths successfully in 160 feet of water.

A. C. Rubel, vice president in charge of exploration and porduction, Union Oil Company, converses over two-way telephone system with operator in diving bell during one of the initial test dives.



Chamber bobs to surface due to its own buoyancy should the operator be forced to release the stabilizing weight in an emergency. Safety belt worn by occupant prevents his being shaken up and injured on interior fittings when such an event occurs.

Field Effective And Shot



By S. T. YUSTER

Division of Petroleum and Natural Gas Engineering, School of Mineral Industries, The Pennsylvania State College, State College, Pa.

THE ROUTINE determination of permeability on cores is fairly well established but the interpretation of this quantity to field behavior is one of the major problems of the oil industry. In the field there may be as many as three fluids, oil, water, and gas in the sand instead of the single fluid air, which is used in the standard laboratory measurements. The oil man is chiefly interested in the effective permeability of certain fluids as a function of operating conditions. In secondary recovery the fluids are the drive medium and the displaced oil in their movement from input to producing well.

The problem of determining the effective permeability under operating conditions is the most important phase of the permeability problem. Some laboratories have been studying this and have made permeability measurements upon unextracted cores with a particular driving medium.

While it would be desirable to measure effective permeabilities directly with the fluids involved, this is not always possible. In most cases it is not possible to duplicate the exact field conditions in the laboratory and any attempt to approach such conditions becomes a tedious, time-consuming process. If permeability measurements could be made in the field, the objections usually raised with respect to laboratory data would be no longer valid. It is believed that such a method is now available in water flooding and it is the purpose of this report to describe the method, the theory underlying it, its limitation, its application, and to consider several field examples. An important by-product of this method is that is gives the effective radii of shot wells which makes it possible to determine the shot responsiveness of a formation and thereby design the correct shot for a given situation.

* Presented at the Ninth Technical Conference on Petroleum Production held at the School of Mineral Industries, The Pennsylvania State College, State College, Pa., November 2 and 3, 1945.

A METHOD has been developed based upon certain theoretical deduction which makes it possible under certain conditions to calculate the effective permeability of a formation to floodwaters and the effective shot well radius. The method depends upon the linear relationship between the logarithm of the cumulative volume of water injected and the reciprocal of the injection rate. The slope of such a line is a function of the effective permeability and the theoretical Y intercept is some function of the shot well radius. Studies of field data indicate a wide variation in relative water permeabilities with a possibility existing of a reaction between the waters and the formation. A variation in shot responsiveness of different formations was also deducted from this study.

Theoretical

In deriving the equation used in this method it is necessary to consider the radial encroachment of water into a uniform sand. The expression for the radial flow of a liquid in a porous medium is

$$(1) \qquad Q = \frac{2\pi k h (P_i - P_f)}{\eta \ln \frac{R}{r}}$$

where Q is the rate of fluid flow in cubic centimeters/second.

k is the effective permeability of the porous medium to the flowing fluid in darcies
h is the sand thickness in centimeters
P_i and P_f are the sand face injection and formation pressures respectively in atmospheres
η is the viscosity of the flowing fluid in centipoise
R is the outer radius of the flow system
r is the effective radius of the shot well or the inner radius of the flow system.
R and r should be in the same units

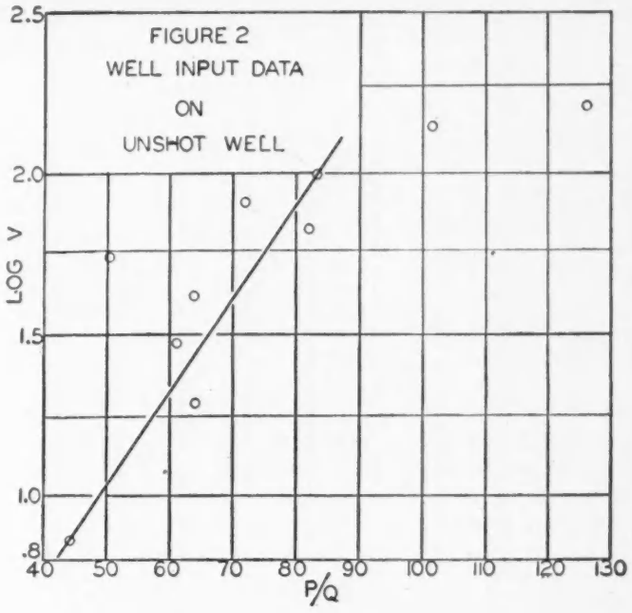
In the case of radial encroachment, the above equation will apply but since R, the outer limit of liquid penetration is not a constant, Q, the intake rate will decrease as R increases. Since R cannot be measured directly, some measurable quantity which is related to it should be substituted for it. That quantity is the cumulative water injected. The relationship between the cumulative water injected and the limit of radial encroachment is given by the equation

$$(2) \qquad V = \pi R^2 h f (1\text{-}w\text{-}S_o)$$

where V is the cumulative volume of water injected in cubic centimeters
f is the fractional porosity of the sand
w is the fractional connate water saturation
S_o is the fractional oil saturation of the reservoir prior to water encroachment

There are two assumptions involved in the above equation which should be indicated. The first is that the water in the tubing plus that required to fill the formation out to the effective well radius is assumed to be negligible. The second is that R in the equation represents the outer limit of water encroachment. Actually, R is the outer radius of the oil bank which is advancing in front of the encroaching water. The Factor $f(1\text{-}w\text{-}S_o)$ is the fractional gas saturation (or void space as it is usually called) of the bulk volume prior to water encroachment. Consequently, R represents a radial advance of both water and oil except in the special case where the oil saturation is so low that no oil bank accumulates applicable bank of oil accumulates in in front of the advancing water. If an front of the encroaching water (this usually takes place in a sand having a high oil saturation) or if the oil has a

Permeabilities Well Radii*



high viscosity as compared to the water, an appreciable error will be introduced in this calculation by the above assumption. It will be assumed for the time being that this error will be small.

Solving equation (2) for R, substituting in equation (1) and simplifying gives

$$(3)a \quad \ln V = \frac{4\pi kh\,(P_i - P_f)}{\eta}\,\frac{1}{Q} + \ln \pi\, hf\,(1\text{-}w\text{-}S_o)\,r^2$$

converting to oil field units gives

$$(3)b \quad \log V = \frac{.00617\,kh\,(P_i - P_f)}{\eta}\,\frac{1}{Q} + \log .559\,fh\,(1\text{-}w\text{-}S_o)\,r^2$$

where V is in barrels, Q in barrels per day, the pressures in pounds per square inch, η in centipoises, k in milledarcies, h and r are in feet, and the logarithm is to the base ten.

It can be seen that plotting log V, the cumulative volume of water injected versus 1/Q, the daily injection rate, should give a straight line in the radial encroachment region. The slope of the line is the coefficient of 1/Q and the theoretical Y intercept is the last term. This equation holds only as long as the liquids are encroaching radially and the limit of such a condition is reached when the advancing liquids from the various wells become tangent to one another. The maximum radius of encroachment would be one half of the water to water well distance. The limiting cumulative volume of water for radial penetration is

$$(4)a \quad V_r = \pi \left(\frac{W}{2}\right)^2 hf\,(1\text{-}w\text{-}S_o)$$

where W is the water to water well distance.

Converting to oil field units

$$(4)b \quad V_r = 0.140\,W^2hf\,(1\text{-}w\text{-}S_o)$$

W and h are now in feet and V_r is in barrels.

These equations apply to a uniform permeability stratum of sand. If the producing formation is made up of several strata in parellel each having a different permeability, the radial encroachment will be in different stages in the various strata. The effects will then be superimposed upon one another in such a way as to make it almost impossible to analyze. Any heterogeneity in permeability whatsoever will introduce an error into the results and the greater the heterogeneity the greater the error. One further requirement is that the sand must have been shot uniformly so that the shot well radius is a constant. Despite these limitations in the scope of application of this method, it should find some use in the analysis of field data.

Method of Analysis

The data required from a well are (1) a core analysis for porosity, fluid saturations, and sand thickness, (2) total water injected as a function of time beginning with the day water was turned in, and (3) the flooding pressure. All meters should be in good condition and calibrated before use. It is desirable to have daily meter readings on the well at the beginning of injection but the time interval may be increased as the total quantity of water injected increases. From these cumulative volume readings, as a function of time it is possible to calculate average daily rate. The reciprocal of the daily injection rate is plotted against the corresponding cumulative volume to obtain the graph needed.

The importance of obtaining accurate data cannot be stressed too strongly. Pressures must be carefully controlled and if an integrating meter is used, the cumulative volume readings must be made at the same time each day. If this is not possible, it is recommended that an injection rate be taken when the cumulative volume is read by timing the rotation of the fractional volume hand on the meter and calculating this value to barrels per day. A stopwatch can be used for this determination. For example, if it takes 120 seconds for one complete rotation of the tenth barrel hand, it will take 20 minutes to inject one barrel or an injection rate of 72 barrels per day. This plus the cumulative volume reading on the meter, when taken over a period of time, will give the best data for this analysis.

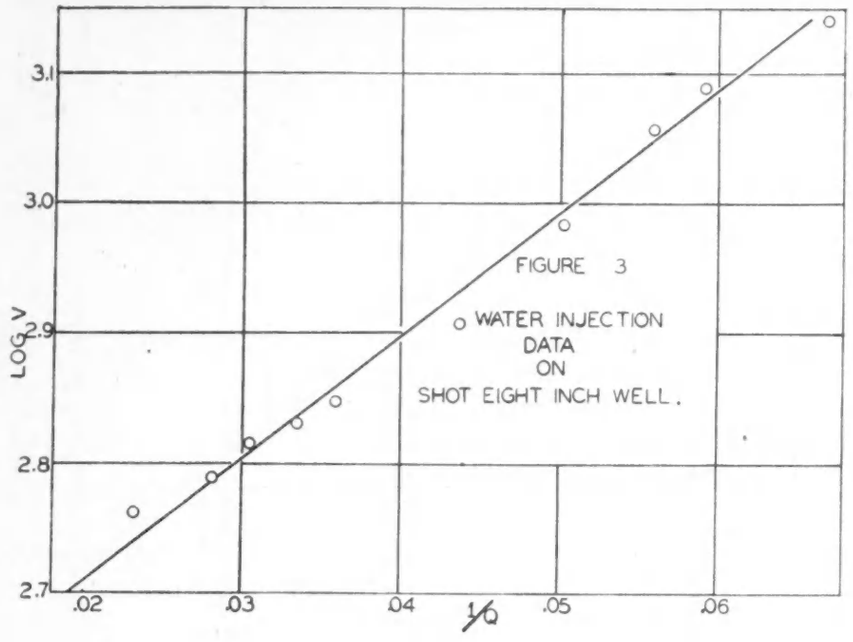
If cumulative volume readings are taken at the same time each day, these data can be converted to the data needed. The difference between the cumulative volume readings on successive days will give the average injection rate for that day. It will be assumed that this average rate is equal to the actual rate at the middle of the day in question. In order to plot the data correctly the cumulative volume of water injected must be had at this same time. Since this is not available, it must be calculated as follows: the volume of water injected in a given day is divided by two and added to the cumulative volume recorded at the end of the previous day. This gives the approximate cumulative volume of water injected up to the middle of the given day. Since the rate calculation gives a rate for the same time, these corresponding data can be used for plotting.

A more accurate method of obtaining the basic data would be to plot the cumulative volume readings as a function of time. The slope of such a curve at any time gives the rate of water injection at that time. Such rates can be plotted against the corresponding cumulative volumes.

At very low rates of water injection, the ordinary nutating disc type of meter may be in error and give low readings. Under such circumstances it is advisable to use a sensitive orifice or capillary type of flowmeter. The rates obtained should be plotted as a function of time. The cumulative volume injection up to a given time is obtained by graphically integrating the area under the curve up to that time. The resulting cumulative volumes are then plotted as a function of the rate.

If the data plot to a straight line up to approximately the limit of radial encroachment, the effective permeability of the sand and the shot well radius may be calculated. If the data do not yield a straight line it may mean (1) that the data are bad, (2) that the sand has a heterogeneous permeability profile or (3) that the sand is plugging off with time due to bad water. Under such circumstances no calculations can be made on the effective permeability and well size. The best input data are obtained if the input pressure is kept constant since transient effects would be absent. However, if there has been a controlled variation in pressure and this has been recorded, the plot of the data should involve the actual sand face pressure minus the formation pressure divided by the daily injection rate versus the logarithm of the cumulative volume of water injected.

By equating the slope of the line, obtained by plotting the water injection



data, to the expression .00617 kh $(P_i - P_f) / \eta$ (see equation 3b), it is possible to solve for k, the average effective permeability, since all the other factors are known. If there has been a variation in pressure and this has been corrected for in the plotting, the pressure terms should be eliminated in the above expression. If the particular well has not been cored and h is unknown, the permeability capacity of the sand kh, can still be calculated. If the calculated value of k is substituted back into Equation (3b) along with a cumulative volume and its corresponding rate, it is possible to calculate r, the effective well radius.

Consideration of Oil Banks

In the theory developed so far, it has been assumed that any oil bank flowing in advance of the encroaching water would behave exactly as if water were flowing in that portion of the sand. It was indicated previously that this assumption is incorrect and in certain instances may introduce an appreciable error. Although the simplified theory is useful, it would be of interest to examine the problem with a consideration of the oil bank included. Just as previously, the rate of radial flow of the water advancing into the sand is given by

$$(5) \quad Q_w = \frac{2\pi k_w h (P_i - P_w)}{\eta_w \ln \frac{R_w}{r}}$$

where the subscript $_w$ refers to water, and P_w is the pressure at R_w, the outer edge of the advancing water.

Similarly, the equation for the flow of oil in the oil bank head of the water bank is

$$(6) \quad Q_o = \frac{2\pi k_o h (P_w - P_f)}{\eta_o \ln \frac{R_o}{R_w}}$$

where the subscript $_o$ refers to oil and R_o is the position of the outer edge of the oil bank.

Since the rate of flow would be a constant past any cross section in a conduit

$$(7) \quad Q_o = Q_w = Q$$

Solving equations (5) and (6) for P_w, equating and simplifying, the expression for the rate becomes

$$(8) \quad Q = \frac{2\pi h (P_i - P_f)}{\frac{\eta_w}{k_w} \ln \frac{R_w}{r} + \frac{\eta_o}{k_o} \ln \frac{R_o}{R_w}}$$

This equation assumes that only water is flowing in the water bank, only oil is flowing in the oil bank, and that the flood front is an advancing cylindrical surface.

The total volume of water injected in terms of the extent of its encroachment, and the properties of the formation is given by the equation

$$(9) \quad V_w = \pi R_w^2 h f (1\text{-w-}S_r)$$

where S_r is the fractional residual oil saturation in the formation after the water flood. This total volume of water is also equal to (see Equation 2 and the discussion of it)

$$(10) \quad V_w = \pi R_o^2 h f (1\text{-w-}S_o)$$

Equating Equations (9) and (10) and solving for the ratio of the radii

$$(11) \quad \frac{R_o^2}{R_w^2} = \frac{1\text{-w-}S_r}{1\text{-w-}S_o}$$

If S_r, S_o, and $_w$ are constant throughout the region of radial encroachment, then the ratio of the oil bank to water bank radius is a constant during the complete process of radial advance.

Substituting Equations (9) and (11) into (8) in order to eliminate R_w and R_o

$$(12) \quad Q = \frac{4\pi L (P_i - P_f)}{\frac{\eta_w}{k_w} \ln \frac{V_w}{\pi r^2 hf (1\text{-w-}S_r)} + \frac{\eta_o}{k_o} \ln \frac{1\text{-w-}S_r}{1\text{-w-}S_o}}$$

The author S. T. Yuster, has collaborated with J. C. Calhoun in an article, "Wax Saturations in Oil Sands," which will appear in an early issue. Watch for it.

Let

$$(13) \quad \frac{\eta_o}{k_o} = B \frac{\eta_w}{k_w}, \quad B = \frac{\eta_o}{k_o} \cdot \frac{k_w}{\eta_w}$$

and making this substitution in equation (12) and simplifying

$$(14) \quad Q = \frac{4 k_w h (P_i - P_f)}{\eta_w \left[\ln \frac{V_w}{\pi r^2 hf (1\text{-w-}S_r)} + \ln \left(\frac{1\text{-w-}S_r}{1\text{-w-}S_o} \right) B \right]}$$

Rearranging terms and solving for V_w

$$(15)a \quad \ln V_w = \frac{4\pi k_w h (P_i - P_f)}{\eta_w} \frac{1}{Q} + \ln \frac{hf (1\text{-w-}S_r) r^2}{\left(\frac{1\text{-w-}S_r}{1\text{-w-}S_o} \right)^B}$$

The above equation indicates that even with an oil bank advancing in front of the radial encroaching water, the logarithm of the cumulative volume of water injected is still a linear function of the reciprocal of the daily injection rate. Converting equation (15)a to oil field units

$$(15)b \quad \log V = \frac{.00617 k_w h (P_i - P_f)}{\eta_w} \frac{1}{Q} + \log \frac{.559 hf (1\text{-w-}S_r) r^2}{\left(\frac{1\text{-w-}S_r}{1\text{-w-}S_o} \right)^B}$$

Comparing Equations (3) and (15) shows their great similarity. They are the same with the exception of the parenthetical expression raised to the B power in Equation (15) and the exchange of S_r for S_o in the numerator of the last term. The slope of the line is the same in the two equations and therefore the calculated effective water permeabilities would be the same in both cases. The effective shot radius however, would be different when calculated by the two equations.

Since the Factor B contains the quantity k_o, the effective permeability of the flowing oil in the oil bank, it must be eliminated in order to solve for r. In the average water flood, it would not be too far from actual conditions to assume that the residual oil saturation in the water bank is equal to the connate water saturation in the oil bank. Since these two residual and non-flowing saturations are the same, the flowing saturations (water in the one case and oil in the other) are the same because it is usually assumed that the sand is 100 percent saturated with liquid in the region under consideration. Because of this it will be assumed that the relative permeability to water, k_w, in the water bank is equal to the relative permeability to the oil, k_o, in the oil bank. This is not strictly true because the relative permeability for a given saturation of the non-wetting fluid is usually greater than the relative permeability for the same saturation of the wetting fluid. However, in some cases this supposition will hold. Introducing this assumption in equaiton (13) gives

$$(16) \quad B = \frac{\eta_o}{\eta_w}$$

Using the above relationship, it is now possible to calculate the effective radius, r, of the shot well. The method is similar to that already described for equa-

tion (3). The maximum limit of radial encroachment is the same as in the first case studied and is defined by equation (4).

In some cases the assumption that $k_w = k_o$ will not be valid. This will be true in areas where field experience has shown that the residual oil saturation after a water flood is not of the order of magnitude of the original interstitial water content of the sand and where the effective permeability is obtained from the slope of the log V versus 1/Q line is considerably different from that which would be predicted by saturation relative permeability curves and the residual oil saturation.

A saturation - relative permeability curve for oil and water is shown in Figure 1. The data are based upon experiments with unconsolidated sands by Leverett[1]. If the relative permeability obtained from the slope of the log V versus 1/Q line is 0.02 for example with a residual oil saturation of 25 percent, the value is considerably different from that indicated in Figure 1, which is about 0.5. Such widely divergent values probably indicate a reaction between the flood water and the reservoir as for example the swelling of certain complex silicates. While this reaction may take place in the water bank, it cannot take place in the oil bank where the flood waters are not present. The flow behavior in the oil bank should be fairly close to normal. Assuming complete liquid saturation in the oil bank and from a knowledge of the original interstitial water saturation of the reservoir, Figure 1 will give the relative permeability of the sand to the moving oil bank. If the well has been cored, the average air permeability of the formation is known. From this and the relative oil permeability, the effective oil permeability, k_o, in the oil bank is computed. Substituting, k_w, obtained from the slope, the above k_o, and the viscosity of the liquids involved in Equation (13) gives B. This may then be substituted into Equation (15) as previously described and r, the effective shot well radius calculated. This method will give the most accurate value. If the well has not been cored, this latter method cannot be used.

When the value of k_w as obtained from the slope of the plot is small and from the known average permeability in the area a considerably higher value would be expected, the relative permeability to the flood waters must be low. As will be indicated later in the discussion of field results, this was the general situation in most of the cases studied. Under such circumstances, the value of B (Equation 13) may be quite small so that the value of the parenthetical expression raised to the B power in Equation (15) will be close to one. The last term would then reduce to the logarithm of the numerator. Average values of the area for h, f, w, and S_r may then be substituted into the last term and the effective radius of the well calculated.

To recapitulate, there is only one value which can be calculated for the effective permeability of the sand to the flood waters and it is obtained from the slope of the log versus 1/Q plot. However, there are four different methods of calculating the effective well radius which involved the theoretical Y—intercept of the log V versus 1/Q plot. The four methods are as follows:

(1) Assuming that the flow and pressure gradients in the oil bank are the same as if water alone were flowing. Equation (3) is used and it is most accurate under the condition of low oil saturation, low oil recovery with small oil bank, or with an oil having about the same viscosity as water and the relative permeabilities in the oil and water bank about the same.

(2) Assuming that the effective permeabilities in the oil and water bank are about the same. Under such conditions B is equal to the ratio of the oil to water viscosities (see equations 13 and 16). Equation (15) is used for the calculation.

(3) The Factor B must be evaluated from the effective water permeability obtained from the slope of the plot, the average air permeability from core analysis data, the relative oil permeability from general data such as given in Figure 1, and the viscosities of the oil and water under reservoir conditions. Equation (15) is used for the calculations.

(4) Assuming that most of the resistance to flow is through the water bank while any pressure drop through the oil bank is almost negligible. The most common condition for this is a low relative permeability to water which means a very low value for B. Under such conditions the parenthetical expression raised to the B power in Equation (15) is set equal to one.

Of all these methods, (3) is the most accurate but it requires the greatest amount of information in order to be applied. Methods (1) and (2) are a bit too specialized to find general application since the conditions required are not encountered very often. With a minimum of sand information available Method (4) should give fairly good results. If any one method is used consistently in a given area, the relative value of the effective radii even though slightly in error, would be of value in a well shooting study.

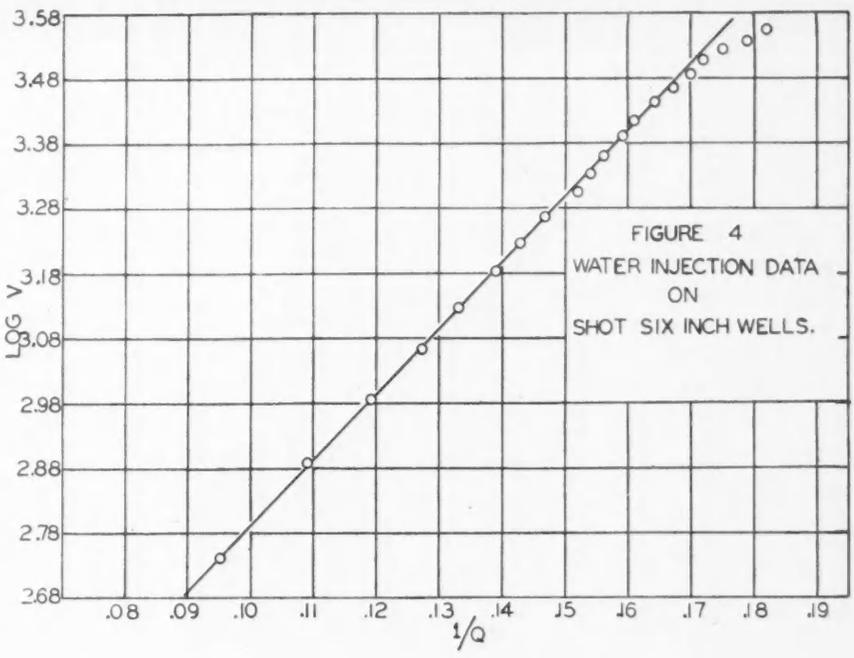


FIGURE 4
WATER INJECTION DATA
ON
SHOT SIX INCH WELLS.

Analysis of Field Data

In order to indicate the application of these methods to the obtaining of effective permeabilities and well radii from field data, the behavior of several wells will be considered. One possible approach to testing this method would be to analyse the data from an unshot well. If the data are good, the calculated effective well radius should be fairly close to the dimensions of the unshot well. Such an analysis was made and the graph of the data is given in Figure 2. Unfortunately, the flooding pressure was varied quite widely as well as the time interval between readings. No core was taken on this well and certain average quantities from cores on a neighboring well were taken. Method (4) was used.

The effective permeability of the sand was calculated to be 0.14 millidarcies. The average air permeability on a core well 1800 feet away was 7 millidarcies. This would give a relative water permeability of 0.02 millidarcies. The calculated effective shot radius was 0.58 feet which is a fair agreement with the 0.26 feet radius of the unshot hole in view of the variation in conditions when the data were taken.

In one section of the Bradford area where the sand has a low permeability and the thickness of floodable sand is a bit below average an attempt was made to flood the area more economically by certain changes in operating technique. Among other things, eight-inch wells were drilled in order to apply a much heavier shot to the formation and increase the effective radius of the wells. Figure 3 gives the water input data on one of these wells. Each point represents about one month of elapsed time. In order to illustrate the method of calculation, the various steps will be considered for this well.

The following average values define the properties of the producing formation:

$k = 1.9$ md.	$f = .125$
$h = 10$ ft.	$S_r = .25$
$w = .25$	$S_o = .44$
$\eta_o = 4.7$ cp.	$\eta_w = 1$ cp.
$k_{ro} = 0.6$ (from w and Fig. 1)	$P_i = 2000$ p.s.i.

$P_f = 0$

Equation (15) will be used to illustrate the calculation. Two points will be taken from Figure 3 and substituted

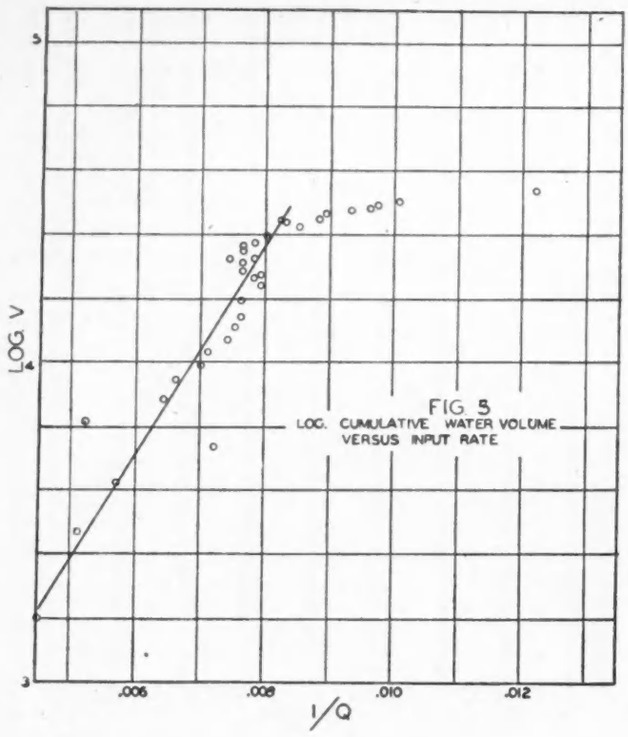


FIG. 5
LOG. CUMULATIVE WATER VOLUME VERSUS INPUT RATE

along with the above data in equation (15).

$$3.1 = .00617x10x2000x.061\ k_w + \log \frac{.559x10x.125\ (1-.25-.25)_r^2}{\left(\frac{1-.25-.25}{1-.25-.44}\right)^B}$$

$$2.7 = .00617x10x2000x.019\ k_w + \log \frac{.559x10x.125\ (1-.25-.25)_r^2}{\left(\frac{1-.25-.25}{1-.25-.44}\right)^B}$$

The final logarithmic term is the same in the two equations. Subtracting the second equation from the first and solving for k w gives

$$k_w = .077 \text{ md}$$

The relative permeability to water will be

$$k_{rw} = \frac{k_w}{k} = \frac{.077}{1.9} = .041$$

In order to evaluate r, B must be calculated.

$$B = \frac{\eta_o}{k_o} \cdot \frac{k_w}{\eta_w} = \frac{4.7}{.6x1.9} \cdot \frac{.077}{1} = .32$$

Substituting the above values of k_w and B into the first equation and solving for r gives

$$r = 33.6 \text{ feet}$$

If method (1) is used to calculate r, its value is 40.0 feet. With method (2) r is equal to 103 feet. This is obviously wrong and the reason for the large discrepancy is that k_{rw} which is equal to 0.041 is considerably different from the value of 0.6 for k_{ro} (obtained from Figure 1 and w = .25). Method (2) requires that k_o and k_w be equal. Method (4) gives a value of r equal to 30.9 feet. It can be seen that methods (3) and (4) are the most accurate under the existing conditions.

In order to compare the behavior of the shot eight-inch well with a shot six-inch well, the data given in Figure 4 were studied. Each point again represents one month of elapsed time. The effective permeability to water is 0.082 md and the relative permeability to water is 0.043. The effective well radius is fourteen feet. A comparison between the eight-inch and six-inch wells is given in the following table:

TABLE 1

Comparison Between Shot—Six and Eight Inch Wells

	Shot Qts/ft.	k_w md.	k_{rw}	r ft.
Six inch well....	3.1	0.077	0.041	14.
Eight inch well	5.6	0.082	0.043	33.

The difference in the effective well radii is to be expected in view of the heavier shooting in the eight inch wells. It is to be noted however, that the relative permeabilities are almost the same in the two wells. If this method of calculating effective permeabilities is reasonably correct and the flooding process is approximately the same in the different cases under consideration, this is to be expected. Apparently the sand conditions are fairly constant in the two wells.

The data from a third well in an area neighboring the two just considered were analyzed because of its high water input rates. The input data are given in Figure 5. The effective permeability of the sand to the advancing flood waters was 0.84 md. Since the average air permeability of the sand was 2.2 md., the relative permeability was 0.38. This is the highest relative permeability encountered in these studies. No adequate explanation can be given at the present time for such high values and also for some of the very low values except to blame it to sand conditions. This is not very satisfactory.

Application to Multiple Shooting

The Clarendon Sand of Pennsylvania is very tight and must be shot as heavy as possible in order to inject water at an economical rate. The South Penn Oil Company in an attempt to obtain a maximum effective well radius, experimented with multiple shooting in the Clarendon area. One five spot was chosen for the test. One well was cored and the two wells on one side of the five spot were given a single shot while the other two were given a second shot after cleaning out the first. After all the shooting was completed and the wells cleaned out, the water was turned in and the injection data gathered. These data were analyzed in the manner already described. The results are summarized in Table 2.

An examination of these results indicates that within the experimental error to be expected in such tests, the second shot did nothing to improve the effective well radius over the first shot. This is contrary to the experience with multiple shooting in gas wells where the second shot was as effective as the first. It will be noted that the shot responsiveness of the Clarendon sand even for higher shot concentrations and large shots is less than that for the Braford sand discussed previously. There seems to be a very rough correlation between effective permeability and the shot radius with the greater radius going with the greater permeability but the data are too meager for the drawing of concllusions. The effective permeabilities are quite low and this coupled with a poor shot responsiveness increase the flooding difficulties. It would appear that one promising approach towards a solution of this problem would be a study of the effect of various types of flood waters on the effective permeability. Brines have shown an increase in conductivity over fresh water in some work performed a few years ago in the laboratory and should be given consideration.

The negative results with multiple shooting of the Clarendon sand should not prevent experimentation with this technique on other sands in view of its success on gas sands. It may be that the poor shot responsiveness of the formation would nullify any remedial action by shooting alone.

Effect of Varying Type of Explosive

One of the shooting problems which is receiving some attention at the present time is the possible effect of different types of explosives on the shot well radius. The South Penn Oil Company made such a test on a five-spot in the Bradford area in which two wells were shot with ordinary nitro-glycerine while the other two wells were shot with a solidified nitro-glycerine. All four wells were cored. The results are summarized in Table 3.

One of the most important facts brought out by this analysis is that the sand shows a very poor shot responsiveness, in fact being the poorest ever encountered in this work. The solidified glycerine is not as effective in fracturing the formation as is the ordinary nitro-glycerine but this may be due to the general poor response to shooting. Well 039 shows an effective radius which is apparently less than the radius of the unshot well. This may be due to the poor data which was obtained on this well or it may be due to a type of plugging action caused by the shot.

The relative permeability to water vary on the four wells by about a factor of three, however, the effective per-

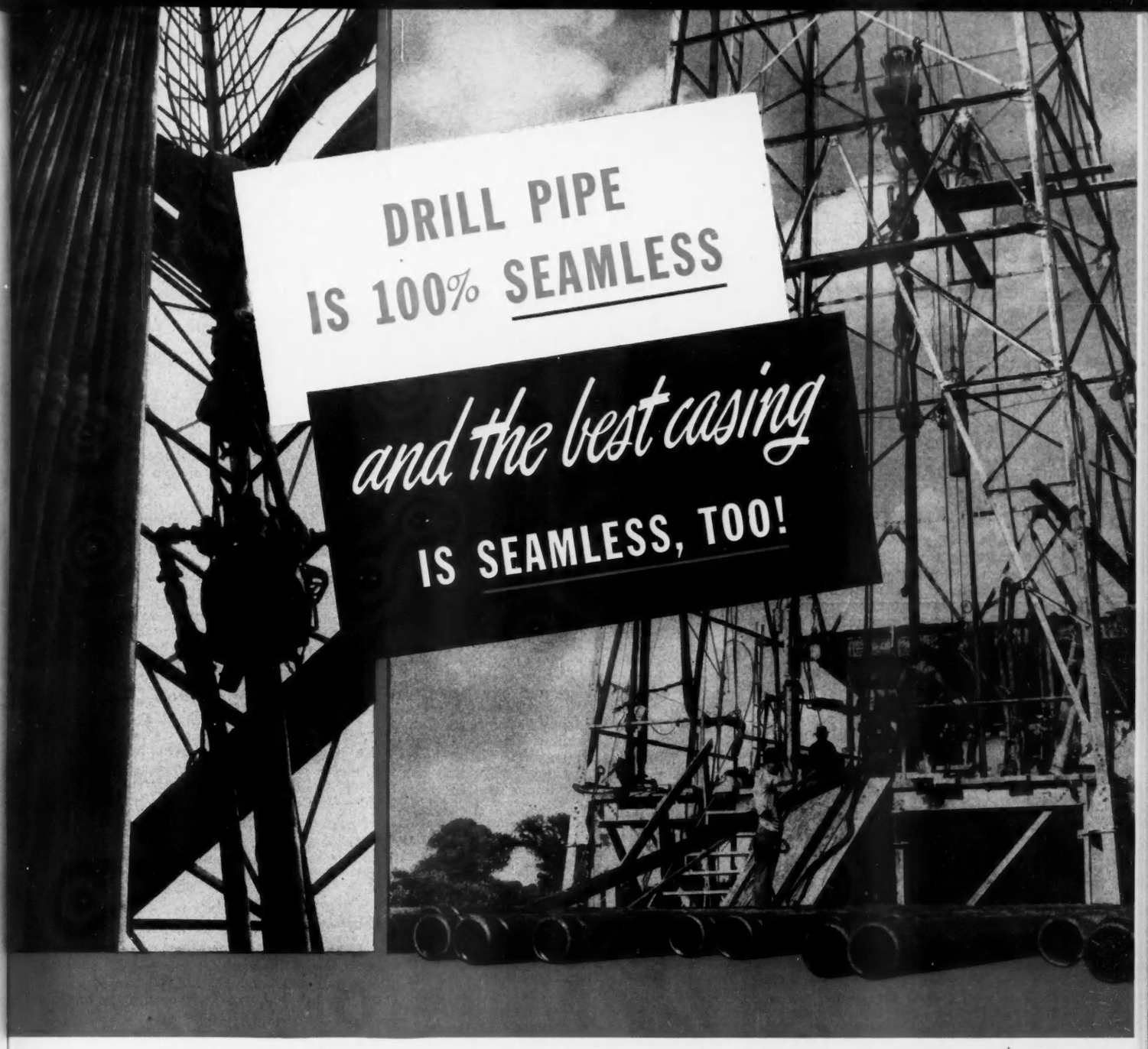


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TABLE 2

Comparison Between Single and Double Shot Wells

WELL	1st SHOT		2nd SHOT		r	k	k_w	k_{rw}
	Total Quarts	Qts./Ft.	Total Quarts	Qts./Ft.	Ft.	md	md	
05	120	4.5	..	..	12	2.6	0.12	0.045
09	120	4.5	..	..	7.9	2.6	0.038	0.015
017	120	4.5	90	4.5	5.3	2.6	0.024	0.0091
018	120	4.5	90	4.5	9.2	2.6	0.15	0.059

meabilities do not vary to widely. The column marked k_wh gives the effective permeability capacity in millidarcy feet. This value is fairly constant for the wells of the five-spot. It can be solved for directly from the slope of the water input data line and no core analysis data are needed. It should therefore be of value to calculate this factor in analyzing the data from an uncored area.

Errors

The errors introduced in this method of calculating the effective permeability of the sand to a water flood and the effective radius of a shot well, by a heterogeneous permeability profile, poor data, erroneous interpretation of data, flooding pressure fluctuations, various assumptions regarding the oil bank, and bad water have already been mentioned. With the exception of the disadvantage of the heterogeneous permeability profile the above errors can be overcome for the purpose of this analysis. While the most obvious difficulty with water is the presence of suspended matter, a sediment free water is no insurance against a plugging action or reduction in permeability. It is a fairly well known fact that various types of clear waters can react with certain materials in an oil producing formation and charge the conductivity. This problem is receiving some long postponed but very deserving attention at the present time.

If the rate of the reaction of the water with the sand is rapid and an equilibrium is reached in a very short time, the Log V versus 1/Q data should plot to a straight line, the slope will give the equilibruim effective permeability, and the theoretical y-intercept will yield the effective shot well radius. However, if the rate of reaction of the water with the sand is slow, the early data may plot a straight line because the sand normally takes the water at the most rapid rate during this period of the life of a flood. The reaction has a minimum effect on the water rates and the slope of the line will give an effective permeability which approaches that of an unreacted sand. As the elapsed time from the initiation of the flood increases, the rate of flood penetration decreases and the reaction between the sand and the advancing water approaches more nearly completion. The average effective permeability of the sand will decrease and with it there will be a decrease in the slope of the line, the decrease in slope being proportional to the decrease in effective permeability.

The theoretical y-intercept under such conditions will yield a value of the effective shot well radius which is too high. Only the initial straight line portion of the curve can be used to obtain the well radius. This is the reason for the great importance of obtaining accurate data from the very initiation of the flood. Providing the flood is in the radial encroachment region the slope of the curve should give the average effective permeability to the flood waters at the particular time.

There may be some transient conditions operating during the first day or two in the life of a flood which will invalidate the data. For example, the shot fissure pattern may not give strictly radial flow conditions at first. The well may be taking water so rapidly that full line pressure is not being applied at the well head. These possibilities should be taken into consideration in evaluating the data.

A word probably should be said regarding the senstivity of the values obtained with respect to errors in drawing the line through the data. Obviously a great deal will depend upon the accuracy of the data. The greater the span of the linear relationship the better the results. Since a difference between two logarithms is involved in the slope, these values should be fairly accurate as they are insenstive functions. The radius will also depend upon the slope but since it enters as the logarithm of r^2, it will not be as sensitive to changes as k_w.

Conclusions and Summary

Since the effective permeability of the sand to the flood waters and the effective shot well radius are quantities which are necessary for the evaluation of the behavior of a water flood property, the method described in this paper for obtaining such information should find fairly wide application. It would appear from the values of the effective permeability cited in this study that the flood waters are probably reacting with the formations to decrease their conductivity. This is unfortunate especially for a sand with as low an average permeability as the Bradford and it would be decidedly advantageous to correct it.

This analysis has also shown a surprisingly wide variation in the shot responsiveness of the producing formation which indicates the necessity of more research along these lines. Possibly other explosives than nitro-glycerine will give good results in areas which now show a poor response to shooting. Consideration should also be given to other methods of increasing the effective well radius in areas which shoot poorly. The possibility of applying special acidizing solutions, and the use of surface active chemicals to increase the effective permeability around the well bore, should not be overlooked.

In summary the following facts are indicated as a result of this study:

(1) From certain theoretical deductions an equation has been derived which shows that he logarithm of the cumulative volume of water injected in a water flood during the radial encroachment period is a linear function of the reciprocal of the injection rate.

(2) The slope of the line mentioned in (1) will yield the effective permeability of the formation to the flood waters.

(3) The theoretical y-intercept of this same line will give the effective shot well radius.

(4) Certain field data have been analyzed and a range of relative water permeabilities from about 0.4 to around 0.001 have been found.

(5) The variation in relative permeability indicated in (4) points towards a possible reaction between the flood waters and the formation to give a plugging action.

(6) The effective shot well radii also show a wide variation in value. This difference in shot responsiveness indicates a need for further experimentation in well shooting techniques.

Acknowledgments

The writer wishes to thank the producers who obtained and made available the data upon which this analysis is based. The financial aid of The Pennsylvania Grade Crude Oil Association in a portion of this work is gratfully acknowledged.

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[1] M. C. Leverett, "Flow of Oil-Water Mixtures Through Unconsolidated Sands." Petroleum Technology, T. P. No. 1003, November, 1938.

Humble Report

Humble Oil & Refining Company was operating 8400 wells at the end of 1945 and had produced 111,338,000 barrels of oil during that year, an output decline of 1.4 percent as compared with 1944, the company's 1945 report shows.

Drilling operations increased substantially over 1944, expenditures for drilling and equipping wells and leases totaling $58.5 million compared with $34 million in 1944 and $18.7 million in 1943. A total of 573 wells were completed in 1945.

Humble had 16,056 employes at the end of 1945 compared with 13,191 at the end of 1941. Of Humble employes released to date from military service, 97 percent have returned to the company, the report said.

Humble Pipe Line Company delivered 225,000,000 barrels through its lines in 1945.

TABLE 3

Effect of Different Explosives On Well Radius

WELL	Explosive	SHOT		r	k	k_wh	k_w	k_{rw}
		Total	Qts./Ft.					
038	N.G.	65 qts.	3.2	2.5 ft.	8 md	5.3	0.27 md	0.034
039	S.G.	66.5 qts.	4.2	0.033 ft.	5 md	7.9	0.49 md	0.10
046	S.G.	75 qts.	2.9	0.39 ft.	6.9 md	8.6	0.45 md	0.065
047	N.G.	80 qts.	4.3	3.2 ft.	5 md	8.2	0.51 md	0.10

Note: The N.G. refers to nitro-glycerine and the S.G. to solidified glycerine (a semi-gelatine dynamite with actual strength equal to 75 percent of nitro-glycerine strength).

THE OUTLOOK

For California Oil

By R. L. MINCKLER
Vice President, General Petroleum Corporation, Los Angeles

ANY forecast of the supply and demand for California oil must be based upon assumptions of more or less doubtful validity. We assume in this forecast that through the year 1950 we will live in a world jittery but at peace. This means, in terms of oil, that the enormous requirements of an active shooting war will not have to be met but that we do face large requirements for Army, Navy and foreign relief purposes far in excess of what we used to call the normal peace-time requirements of the government.

The forecast is also based upon an expected high level of industrial activity within the United States and particularly in the Pacific Coast region. We do not believe that it will be without its peaks and valleys. We think now that industrial activity will rise to extremely high levels during 1946 and early 1947 and that, starting in 1948, there will be a decline. This matter of timing fluctuations in activity is important for the short-term determination of policies but for this long-term five-year forecast, we have eliminated the effect of such peaks and valleys and have assumed a high plateau of activity throughout the five years.

Various factors which we have considered in forecasting the demand for individual products will be described later in detail.

Offshore Demand

Before the war, the offshore market for California crude oil and products was a very important factor. Table 1 shows the destinations and amounts of these shipments, based on the best information available. We believe that the prospects of resuming shipments in such quantities are very poor. A glance at the names of the countries to which we shipped oil before the war is all that is required to realize that they will be poor customers in the postwar period. Japan, China, and the Philippines are exhausted, their industry almost completely destroyed, and their ability to pay for oil products reduced to very low levels.

As for Australia and New Zealand, these are sterling bloc countries and we think it very unlikely that public authority in those countries will permit the use of dollar exchange for the importation of oil products from the United States so long as supplies are readily available in other sterling countries such as Iran.

We expect that our Trans-Pacific shipments from California will be limited to relief levels during the early years of the forecast period and that local production in the East Indies and importations from the Persian Gulf will meet the demand thereafter.

We see no prospect of resuming intercoastal and Atlantic foreign shipments on a large scale in the face of the availability of supplies from the Caribbean and Gulf Coast sources.

In both the Trans-Pacific and Atlantic shipments, there may be individual company movements for reasons not related to normal economic circumstances but these cannot long be continued nor amount to very much in total volume.

We expect that California will continue to supply the demands of Western Canada, Alaska, Hawaii, and the West Coast of Mexico and Central America.

The total offshore movements will be on the order of 80,000 to 85,000 barrels per day, as compared with a prewar level of more than twice that amount.

Domestic Demand

The expectation regarding domestic demand for petroleum products is quite different from that of export demand.

TABLE 1

Offshore Shipments of Crude Oil and Products from California, by Destination, 1937-40

	(In Thousands of Barrels per Day)			
Pacific Foreign	1937	1938	1939	1940
West Coast of Americas	31.0	28.0	26.7	27.3
Australasia	9.6	8.6	4.4	3.6
Canal Zone	4.7	3.2	5.4	6.2
China	6.4	2.2	4.3	3.1
Japan	77.5	81.8	70.8	55.0
Manchuria	3.3	4.6	4.6	5.4
Philippines	4.2	6.8	8.5	6.6
Soviet Union	4.2	4.2	2.4	3.1
Miscl. & Package Shipments	7.9	5.8	8.1	9.3
Total Pacific Foreign	148.8	145.2	135.2	119.6
Atlantic Foreign	24.8	23.4	17.2	3.4
Intercoastal	16.3	14.9	23.2	18.5
Total	189.9	183.5	175.6	141.5
Alaska and Hawaii*	15.1	13.6	16.0	20.0

* Included in Domestic Market Area.

TABLE 2

Population and Motor Vehicle Registrations Five Western States

YEAR	Population	Percent of U.S.	Motor Vehicle Registration	Percent of U.S.
1910	4,518,794	4.89	....	....
1920	6,133,183	5.76	906,000	9.82
1930	8,760,922	7.12	2,901,000	10.93
1940	10,411,926	7.89	3,985,000	12.21
1950 (Est.)	13,785,000	9.66	5,241,000	13.20

We confidently expect that domestic demand in the Pacific Coast area will exceed all earlier peacetime levels by a substantial margin and probably will exceed the estimates of postwar demand which have had widespread circulation during the past few months.

The population of the Pacific Coast states has increased at a tremendous rate during the war years. We expect that a very large part of these people will permanently stay in the West. We expect that the population of the five western states in 1950 will be nearly 14 million people. This figure is substantially higher than most other current estimates but we consider it well justified by all of the circumstances. It is significant that most of the other forecasting agencies are now making upward revisions of their estimates of future population.

The Pacific Coast and the Lower Mississippi Valley are the two areas in the United States enjoying an extremely active increase in industrial construction. Many of the leading firms of the United States, with plants elsewhere, are decentralizing their operations and the market into which they are moving with new productive capacity, is here in the western states.

We feel certain that this area is at the beginning of a new period of vigorous growth.

Military Demand

During the next five years, the military demands for petroleum products are bound to be high—much higher than in the prewar period. A great deal of this military and naval activity will be in the Pacific, and California is the natural source of oil supply for it. We believe that the military requirements of petroleum products will be two or three times that of the prewar years.

We enter this period of high demand with very low inventories. In 1938 our inventories of crude oil and products amounted to more than 160 million barrels. They are now a little more than 70 million barrels. The test of actual experience with these low inventories indicates that for maximum efficiency of the industry we should have some increase in stocks. We believe that a total inventory of crude oil and products in the Pacific Coast area of about 100 million barrels is a comfortable working level.

You are all interested in what the demand for crude oil will be. It is our opinion that to meet the current demand for petroleum products in this area and

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accuracy of interpretation

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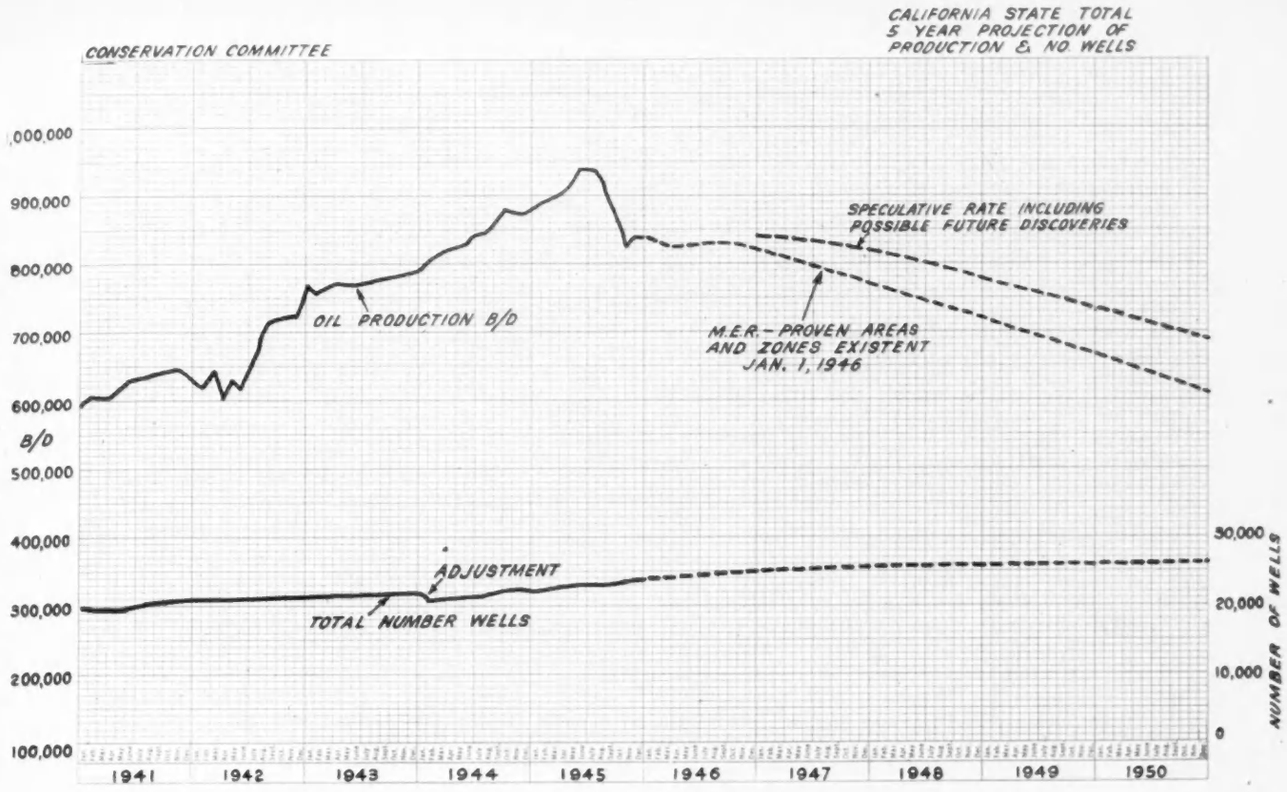


Figure 1. History and forecast of California crude oil production

to build inventories up to a more comfortable working level, will require a crude oil production during 1946 of about 818,000 barrels per day. The requirements in 1947 through 1950 will be from 725,000 to 744,000 barrels per day.

The various factors which determine the magnitude of demand, as well as the history and forecast of demand for various products, are shown in the tables and described in the text following.

Crude Oil

Exports will be limited to shipments to Canada for use in West Coast refineries, at an estimated rate of 14,000 to 15,000 barrels per day. Shipments to Japan are not expected to be resumed during this forecast period. It is assumed that under military occupation, Japan will be permitted to import only a limited quantity of finished products and that the rehabilitation of Japanese refineries for processing other than about 5500 barrels per day of local crude will not be encouraged. No intercoastal or Atlantic foreign shipments of crude oil are anticipated.

Highway use has previously accounted for about 90 percent of our total domestic demand for gasoline. Such factors as population, automotive production, highway construction programs, motor vehicle registrations, efficiency of engines, design and weight of motor vehicles, miles driven, gasoline consumed per vehicle, average hours worked, and time available for recreation, have all been considered in arriving at an estimate of future highway use. Table 2 lists some of these.

Reduced motor fuel consumption may be expected as a result of improvements in both engines and fuel. Any such reduction, however, is likely to be offset by more miles driven per year. This should be particularly true on the Pacific Coast where weather conditions permit nearly full-year use of motor cars and where recreational areas will attract the people of other states as well as our own people.

Other increases may be expected in gasoline and related products for non-highway uses also, including aviation gasoline for commercial and private flying, motor boat fuels, agricultural fuels, solvents, and raw materials for synthetic rubber.

The total domestic demand (186,000 barrels per day in 1940 and 214,000 barrels per day in 1941) is expected to reach 274,000 barrels per day by 1950, a 28 percent increase over the previous peacetime high of 1941.

Distillate Fuel Oils

Table 3 shows the domestic demand by classes of users.

The projected increase in railroad use is due to a widespread change from steam to diesel locomotives. Recent Interstate Commerce Commission figures for the United States show that the number of diesel locomotives increased from 797 in 1940 to 3022 in 1944, while the number of steam locomotives de-

TABLE 3

Demand for Diesel and Other Distillate Fuels—Barrels Daily, Five Western States, Based on Bureau of Mines' Actuals

USES	1937	1939	1941	1944	1947	1950
Railroads	142	299	953	3,877	7,000	7,800
Vessels	25,723	22,090	11,216	7,822	12,000	13,000
Gas and Electric Power Plants	1,033	600	896	525	600	600
Smelters, Mines and Mfg. Industry	759	1,162	2,014	2,257	2,100	2,400
Heating	9,008	13,266	20,389	36,628	29,000	32,000
U. S. Navy, Army and Coast Guard	395	2,145	3,083	14,003	4,500	3,600
Used by Oil Companies	129	255	334	284	400	400
Miscellaneous	14,164	9,312	10,962	12,432	10,000	13,000
Total	51,353	49,129	49,847	77,828	65,600	72,800

TABLE 4

Demand for Residual Fuels—Barrels Daily, Five Western States, Based on Bureau of Mines' Actuals

USES	1937	1939	1941	1944	1947	1950
Railroads	80,066	69,337	96,452	125,536	84,000	71,600
Vessels	53,085	49,192	38,222	69,186	37,000	37,000
Gas and Electric Power Plants	9,882	6,293	9,447	17,243	15,000	13,000
Smelters, Mines and Mfg. Industry	31,416	26,296	32,019	41,814	30,000	33,000
Heating	16,047	12,600	15,145	21,314	20,200	23,500
U. S. Navy, Army and Coast Guard	15,384	15,485	33,247	117,098	50,000	50,000
Used by Oil Companies	11,060	23,293	23,849	27,615	20,500	20,000
Miscellaneous	15,008	4,907	6,679	3,891	6,500	8,000
Total	231,948	207,403	255,060	423,697	263,200	256,100

clined slightly from 40,041 to 39,681. On February 1, 1946, locomotives on order included 367 diesel, 81 steam, and 6 electric. When the postwar traffic levels off, steam engines will be laid up first, continuing most of the new diesels in service.

Diesel bunker fuel is not expected to reach its prewar volume during this period. Many diesel powered vessels, including all the Japanese and many of the Scandinavian fleet which formerly bunkered here, have been sunk.

Use by smelters, mines, and manufacturing industries will increase with postwar industrial activity. Distillate fuel used for heating is expected to remain close to the war-time level. The loss of war-time industry and war housing should be offset by new residential and industrial construction. Military requirements are estimated to decline gradually to a 1950 level somewhat higher than prewar.

Fuel Oil Residuum

Table 4 shows the domestic demand by classes of users in a manner similar to Table 3.

The 1950 reduction in railroad use does not indicate a forecasted recession in rail traffic but rather the natural result of the indicated change from heavy fuel oil to diesel oil. Due to recreational travel and increased western population, railroad traffic is expected to continue well above prewar.

Fuel oil bunkers are expected to level off at about the 1941 level, with much of the shipping handled in efficient Victory ships. Competition in supplying fuel may be expected from other areas.

Fuel for electric power will be affected by greatly augmented hydroelectric generation at Boulder, Grand Coulee, Bonneville, etc. Such power will be used to its limit before supplementing with fuel. However, demands for natural gas have multiplied until fuel oil is taking over a large part of the load previously handled by gas. The net effect is a considerable increase in fuel oil use compared to prewar.

Fuel oil requirements of smelters, mines and manufacturing industries will reflect the general trend of industrial activity. Military requirements have been estimated at a little over three times the prewar requirement.

Table 5 shows the total demand, itemized by principal products. The supply and accompanying stock changes are also shown.

Table 6 indicates that all refinery operations called for by this forecast are well within the flexibility of the industry.

Crude Oil Supply

We confidently expect that California's ability to produce crude oil during the period of this forecast will be sufficiently high to meet the demands set out in the forecast, but the margin of surplus capacity at the end of the period shrinks to practically nothing.

In making this statement, we are relying upon the declining production from existing oil wells, new production from new wells drilled in known productive areas and new production from discoveries.

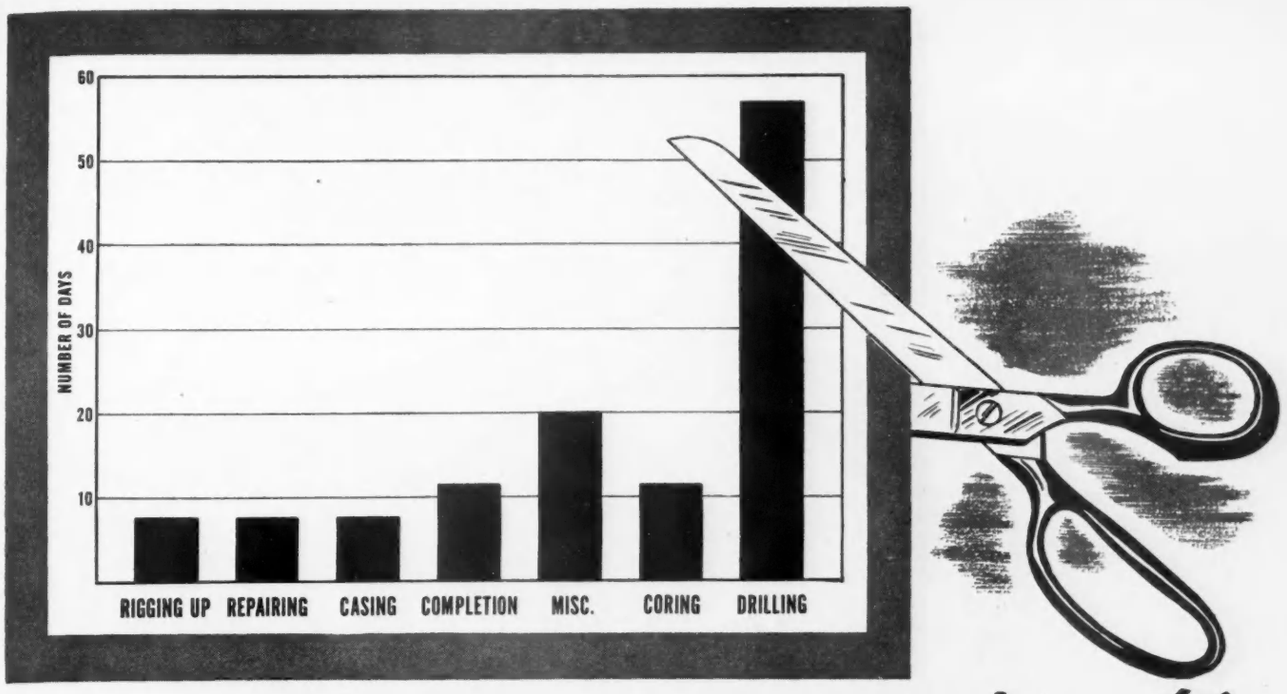
The maximum efficient production rate of existing wells is set now at about 825,000 barrels per day. We have for the balance of 1946 enough drilling locations in proved areas to maintain a substantial drilling program, but beyond 1946 we rapidly run out of presently known drilling locations and become in-

TABLE 5

History and Forecast of California Petroleum Demand, Supply, and Stocks 1937-50
Based on U. S. Bureau of Mines Records

M Barrels Daily—42's	1937	1938	1939	1940	1941	1942	1943	1944	1945	1946 Forecast	1947 Forecast	1948 Forecast	1949 Forecast	1950 Forecast
TOTAL DEMAND, DOMESTIC & OFFSHORE CRUDE OIL—ALL GRADES—														
For Disposal as Crude without Processing or Transfers														
Demand in Domestic Market Area & Losses	3	6	3	3	3	2	3	3	3	3	3	3	3	3
Offshore Shipments	57	76	62	52	26	17	17	14	11	14	14	14	14	14
Total Current Demand and Losses	60	82	65	55	29	19	20	17	14	17	17	17	17	17
Natural Gasoline and L. P. G.														
Demand in Domestic Market Area and Losses	5	4	5	7	9	*	*	*	*	13	14	15	16	16
Offshore Shipments	2	2	2	1	1					1	1	1	1	1
Total Current Demand and Losses	7	6	7	8	10	12	11	13	14	14	15	16	17	17
Gasoline (Motor and Aviation) and Naph. Dist.														
Demand in Domestic Market Area and Losses	173	170	176	186	213					249	253	259	270	274
Offshore Shipments	44	43	35	28	22					23	24	24	21	22
Total Current Demand and Losses	217	213	211	214	235	235	268	316	341	272	277	283	291	296
Kerosene and Kerosene Dist.														
Demand in Domestic Market Area and Losses	5	5	5	5	6					5	5	6	6	6
Offshore Shipments	9	6	8	4	1					7	9	7	5	4
Total Current Demand and Losses	14	11	13	9	7	7	9	8	8	12	14	13	11	10
Gas Oil and Diesel Oil														
Demand in Domestic Market Area and Losses	54	48	52	53	54					72	70	73	76	78
Offshore Shipments	31	25	31	24	15					9	13	14	13	13
Total Current Demand and Losses	85	73	83	77	69	68	83	85	86	81	83	87	89	91
Fuel Oil Residuum														
Demand in Domestic Market Area and Losses	242	194	218	237	270					322	276	276	275	271
Offshore Shipments	36	26	31	23	16					14	19	22	22	22
Total Current Demand and Losses	278	220	249	260	286	352	450	440	483	336	295	298	297	293
Lubricants and Greases														
Demand in Domestic Market Area and Losses	6	6	6	6	8					8	9	10	10	10
Offshore Shipments	3	3	4	5	4					2	2	2	3	3
Total Current Demand and Losses	9	9	10	11	12	11	13	14	15	10	11	12	13	13
Asphalt and Road Oils														
Demand in Domestic Market Area and Losses	15	14	14	16	22					19	25	23	21	19
Offshore Shipments	2	2	3	3	1					1	1	1	1	1
Total Current Demand and Losses	17	16	17	19	23	34	25	25	22	20	26	24	22	20
Miscellaneous Products, Ref. Shortage and Gas														
Demand in Domestic Market Area and Losses	18	20	20	22	28					36	36	36	36	36
Offshore Shipments	3													
Total Current Demand and Losses	21	20	20	22	28	26	34	44	49	36	36	36	36	36
Total Petroleum														
Demand in Domestic Market Area and Losses	521	467	499	535	614					727	691	701	713	713
Offshore Shipments	187	184	176	141	86					71	83	85	80	80
Total Current Demand and Losses	708	651	675	676	700	764	†914	962	1,030	798	774	786	793	793
Supplies as Follows:														
Current Production, Crude Oil	653	684	615	612	631	680	779	852	894	818	725	737	744	744
Current Production, Natural Gasoline	42	45	42	41	42	41	45	50	58	50	45	45	45	45
Receipts from Outside 5 States	4	3	3	4	6	10	16	28	40	4	4	4	4	4
Stock Withdrawls or Additions	9	81	15	19	21	32	75	32	38	74				
Total Supply—M B/D	708	651	675	676	700	763	915	†962	1,030	798	774	786	793	793
Inventories, End of Year														
Five Western States—M Barrels	129,782	159,574	154,106	147,402	139,854	127,590	†100,447	86,681	73,006	100,000	100,000	100,000	100,000	100,000

Notes:—Figures do not always add exactly to totals because of rounding.
* Division between domestic and offshore unknown during war years.
† Opening stocks January 1, 1944 were adjusted from 100,447 M to 98,209 M. Other adjustments in 1938-39 also effect reconciliation with line 47.



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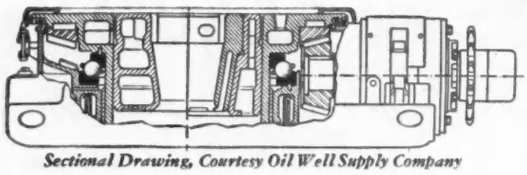

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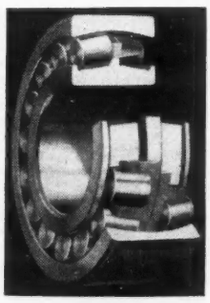

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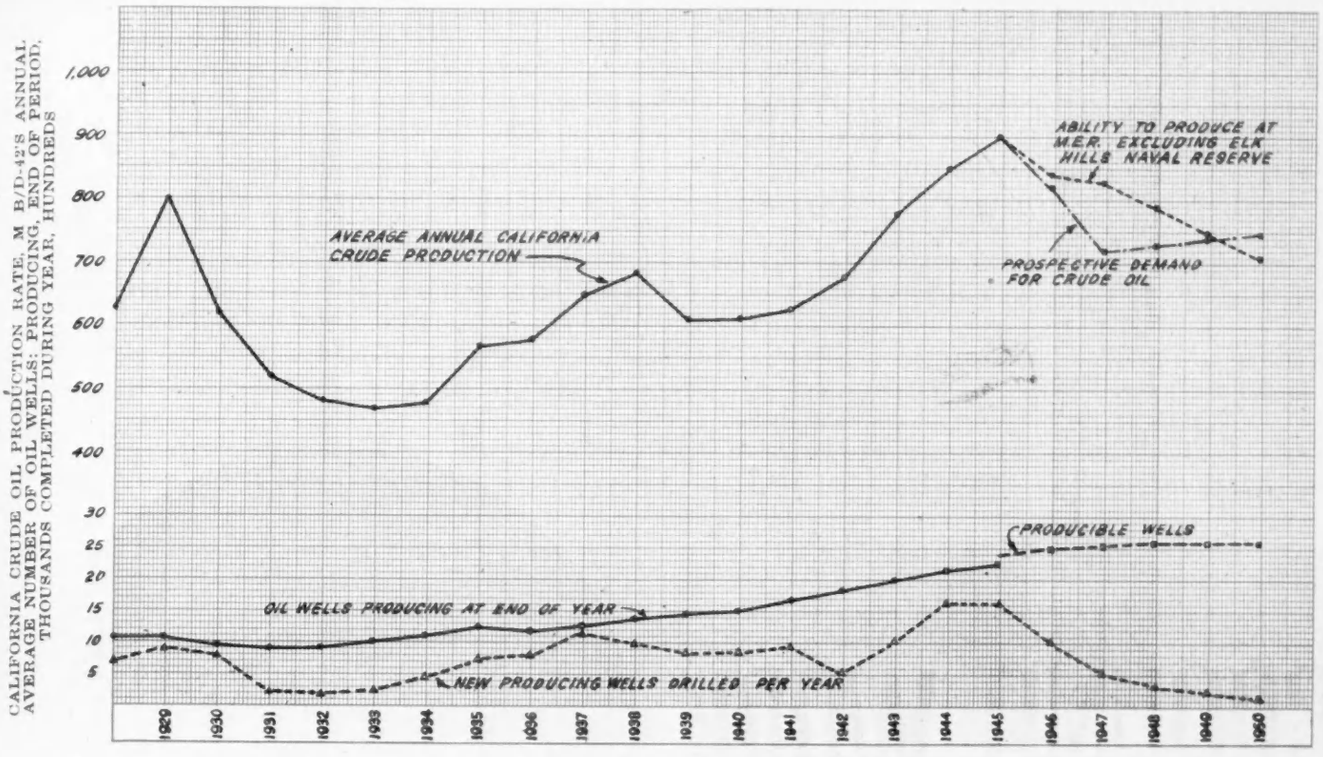


Figure 2. California crude oil production, 1928-1950. Ability to produce vs prospective demand, 1946-50. Number of oil wells drilled and producing.

creasingly dependent upon new discoveries to maintain even a very low rate of development.

It is expected that the maximum efficient rate of production from known fields and zones will decline from the present level of 825,000 barrels per day to a little more than 600,000 barrels per day at the end of 1950. This rate of decline will be accelerated if operators persist in production in excess of maximum efficiency recovery; it will be retarded if we exercise a little restraint.

As to the production we can expect from new discoveries, this is, of course, pure guesswork. We know that new discoveries will be made and we know a few other significant facts. For example, we know that during the 1920's we discovered a great number of very important fields: Signal Hill, Santa Fe Springs, Kettleman Hills, etc. During the 1930's we had similar good fortune with Wilmington, Coalinga and a considerable number of Stevens sand fields in the San Joaquin Valley. We are now more than half way through the 1940's and we have nothing of importance equal to such fields to our credit. The prospects for another Wilmington seem poor, and we probably face for the next five years a discovery record something like that of the past five years.

We know that exploratory effort during the past five years of disappointing results has been at a very high level, so the record has not been because we were not trying.

We know that our methods of testing prospective areas are much more conclusive than in earlier years. The prospect of one operator finding something overlooked by another is poor.

For the purposes of this forecast, the production for the next five years from new discoveries and extensions of presently known fields is based on the actual average experience of the last four years. This new production, together with the fully developed production from presently known fields and zones, will give us a maximum efficient production capacity at the end of 1950 just under 700,000 barrels per day. This figure will be higher if we produce at rates lower than maximum M.E.R. during the early years of the period, but it will be lower if we wastefully overproduce.

The forecast of production at M.E.R.'s on the basis described, as compared with the actual rates of production since 1940, is shown in Figure 1, "History and Forecast of California Crude Oil Production," supplied by the Conservation Commitee.

At the end of 1950, it is estimated that our then current production will be coming from the following sources:

	Barrels per day
From wells drilled prior to 1946..	500,000
From 2185 new wells drilled in presently known fields.....	110,000
From new discoveries.....	80,000
Total	690,000

The relationship of the expected supply to the expected demand for crude oil is shown on Figure 2, together with the history of actual crude oil production since 1927. Several significant facts are disclosed by this chart.

First, production in the next five years will be substantially higher than in the prewar period and we will have an economic demand to absorb that production instead of the uneconomic prewar demand which included shipments into markets where California refiners had no business being.

Second, we will have productive capacity in excess of demand for the next two or three years and then we shall be short. The producers of California have two choices in the management of this short-term excess producitve capacity. We can produce it now and force the products of that unnecessary production into uneconomic markets or we can produce only to meet an economic demand, thereby deferring the time of shortage and producing the oil when it is needed later.

It seems to me that enlightened self-interest, as well as sound public policy, requires that we produce only to meet demand. For more than 20 years, the California crude oil producer has been in a buyer's market. In the almost immediate future, he will be in a seller's market. That will be good, not only for the producer but for the community and the nation as well.

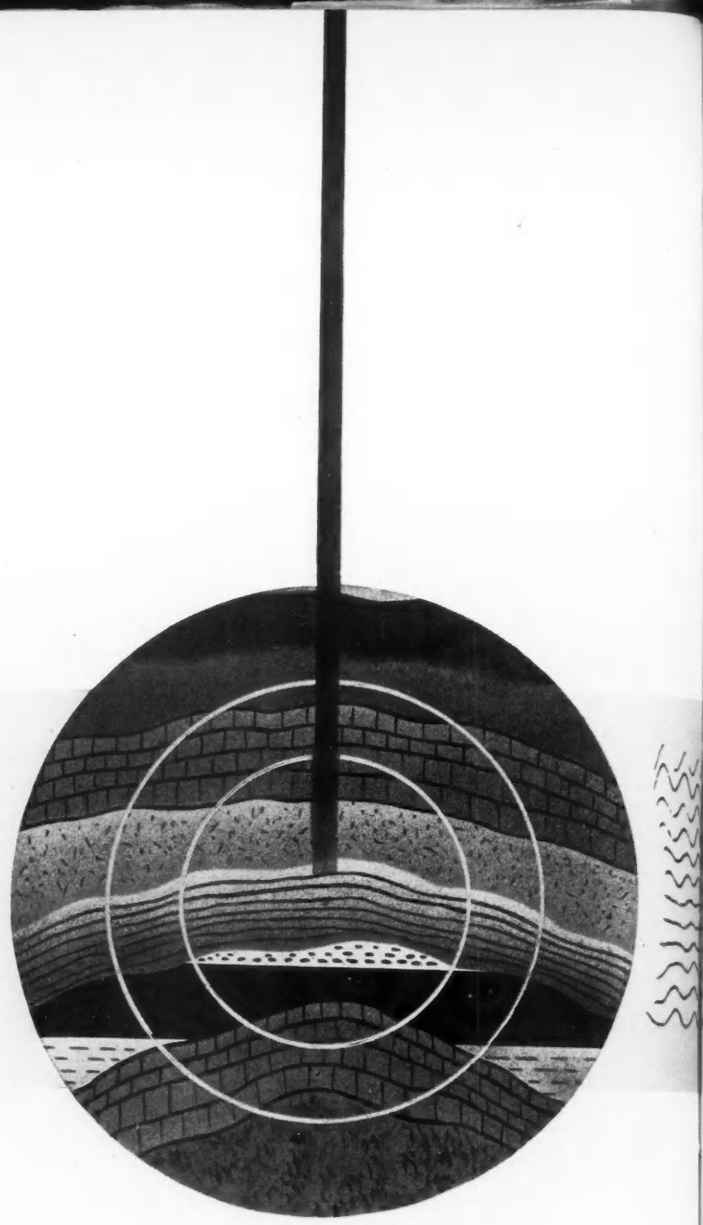
TABLE 6

Percentage Demand by Principal Products

(Bureau of Mines Basis)

	1933 Percent	1935 Percent	1937 Percent	1939 Percent	1941 Percent	1947 Percent	1950 Percent
Crude Oil	5.2	7.2	8.5	9.6	4.3	2.2	2.1
Gasoline and Naphtha Distillate	32.8	31.6	30.6	31.3	33.6	35.8	37.3
Gas Oil and Diesel Oil	9.2	9.8	12.0	12.3	9.9	10.7	11.5
Fuel Oil Residuum	42.7	42.1	39.3	36.9	40.9	38.1	36.9
Other, Ref. Shortage and Gas	10.1	9.3	9.6	9.9	11.3	13.2	12.2
	100.0	100.0	100.0	100.0	100.0	100.0	100.0

GROUND WORK



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Accurate sub-surface information compiled by exacting General Geophysical crews has been the foundation . . . the groundwork . . . for many successful drilling programs. Yes, General combines experienced crews . . . with modern equipment . . . to carry out a planned program to obtain accurate data which are thoroughly compiled and correctly interpreted. And there's your assurance of dependable surveys.

Today, we're even better equipped . . . with highly trained crews and modern equipment . . . than during any of our decade of service to the oil industry. These crews are available now . . . ready to compile accurate sub-surface data based on proven principles and methods of modern seismology.

Figure General Geophysical surveys as the foundation . . . the groundwork . . . of your future drilling programs.

General GEOPHYSICAL COMPANY GGC HOUSTON

Wildcats Follow Upward Drilling Trend

THE number of wells completed in the search for new sources of petroleum and gas during March represented a slight increase over the exploratory completions of the previous month and of March of last year. This increase was in line with drilling in general, as more wells of all classes, exploratory and non-exploratory, were completed during March than in the above-mentioned periods. However, exploratory drilling during the first three months of the current year lagged slightly behind last year's first quarter. This small decline in exploration, when compared with the increase in general drilling done so far this year, does not, as yet, bear out the industry's indications that it would drill a few less total wells, but slightly more wildcats in 1946.

During March, 1946, exploratory wells were completed at the rate of 80 per week, which is an increase over the 77.8 per week completed in the previous month and the 70.3 per week during March, 1945. However, during the first three months of the current year, exploratory wells were completed at the rate of 76.8 per week, a decrease of 1.7 percent from the 78.2 weekly average of the same period of 1945, while completions of all types were increased 12.5 percent over last year's figure.

The number of tests that were successful represented 21.3 percent of the total explorations made during March,

Summary of Results of Exploratory Drilling

ITEM	Mar., 1946	Feb., 1946	3 Months JAN.-MAR. 1946	1945	Percent Diff.
Oil Discoveries	41	38	108	126	— 14.3
New Fields	23	25	71	94	— 24.5
New Pays	18	13	37	32	+ 15.6
Distillate Discoveries	6	1	11	13	— 15.4
New Fields	5	.....	5	10	— 50.0
New Pays	1	1	6	3	+100.0
Gas Discoveries	8	12	34	30	+ 13.3
New Fields	8	6	27	26	+ 3.8
New Pays	.....	6	7	4	+ 75.0
Total Discoveries	55	51	153	169	— 9.5
Extensions to Fields	13	16	43	34	+ 26.5
Oil Fields	6	14	29	29	.....
Distillate Fields	1	.....	2	1	+100.0
Gas Fields	6	2	12	4	+200.0
Total Prod. Tests	68	67	196	203	— 3.4
Dry Holes	252	244	803	813	— 1.2
(Weekly Average)	63.0	61.0	61.8	62.5	— 1.2
Wildcats	248	235	778	788	— 1.3
New Pays	1	7	17	11	+ 54.5
Outposts	3	2	8	14	— 42.9
Total Expl'tory Tests	320	311	999	1,016	— 1.7
(Weekly Average)	80.0	77.8	76.8	78.2	— 1.7
Percent Productive: (Weekly Average)	21.3	21.5	19.6	20.0	.....
Percent Dry: (Weekly Average)	78.7	78.5	80.4	80.0	.....

Dry hole completions are from weekly reports and totals represent completions for 4 weeks in March, 1946; 4 weeks in February, 1946; 13 weeks in Jan.-Mar., 1946; 13 weeks in Jan.-Mar., 1945.

Results of Exploratory Drilling in March and First 3 Months, 1946-1945, by Districts

State or District	MONTH OF MARCH, 1946													FIRST THREE MONTHS, 1946															
	Productive Tests										Unproductive Tests				Productive Tests									Unproductive Tests					
	New Fields			New Pays			Extensions			Total Productive				Total Exploratory Tests	New Fields			New Pays			Extensions			Total Productive				Total Dry		Total Exploratory Tests	
	Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.		Wildcats	New Pays	Outposts		Oil	Gas	Dis.	Oil	Gas	Dis.	Oil	Gas	Dis.	3 Mo. 1946	3 Mo. 1945	Wildcats	New Pays	Outposts	3 Mo. 1946	3 Mo. 1945	3 Mo. 1946	3 Mo. 1945
Alabama											2			2												4			4	4	4	4
Arkansas											1			1							1			1		7		1	8	12	9	12
California											17			17		1								1	1	62			62	64	63	65
Colorado																										3			3	2	3	2
Florida											1			1												5			5	4	5	4
Georgia											1			1												1			1	2	1	2
Illinois							1			1	27			28	3			2			7			12	22	86			86	64	98	86
Indiana											4			4				2			1			3	1	10			10	26	13	27
Iowa																														1		1
Kansas	5	3		1			3			12	12			24	10	3		1			11	1		26	22	58			58	78	84	100
Kentucky											6			6	2	1		2						5	2	21			21	29	26	31
Louisiana	2			4				2		8	20			28	8		1	5		2		2		18	23	41			41	37	59	60
North Louisiana	1							1		2	10			12	2					1		1		4	5	25			25	22	29	27
South Louisiana	1			4				1		6	10			16	6		1	5		1		1		14	18	16			16	15	30	33
Michigan	1									1	12			13	3				2		2			7	5	52		1	53	50	60	55
Mississippi	1							1		2	9			11	1							1		2	4	17			17	33	19	37
Missouri																										1			1	3	1	3
Montana											1			1											1	2			2	2	2	3
Nebraska																														2		2
New Mexico											4			4				1			1			2	1	14	1		15	17	17	18
New York																										1			1		1	
Ohio								3		3	5			8	1	6						5		12	9	12			12	15	24	24
Oklahoma	4	3		1					1	9	16			25	19	5		2	5		1		1	33	26	66			66	69	99	95
Pennsylvania																2								2							2	
Tennessee																										1			1		1	
Texas	10	2	5	12		1	2			32	110	1	3	146	23	7	4	22		4	5	3	1	69	83	307	16	6	329	292	398	375
E. Texas Border		2								2	1			3	1	3						1		5		2			2	6	7	6
Rest of E. Texas	1			1						2	8	1		11	1			1			1	1		4	3	25	2		27	16	31	19
North Texas	3			1						4	36			40	8			5						13	13	80	3		83	65	96	78
West Central Tex	4									4	13		1	18	5	1								6	6	42	3	1	46	24	52	30
West Texas				2			1			3	16			19	2	2		4			1			9	15	42	5	2	49	63	58	78
Panhandle											1			1												5	1		6	3	6	3
Upper Gulf Coast	1		3	3		1	1			9	12		2	23	3			3	5		3		1	15	18	33		2	35	28	50	46
Lower Gulf Coast			2	5						7	7			14				1	6	4		1		12	21	38	2		40	52	52	73
Southwest Texas											7			7		1		1						2	6	20		1	21	29	23	35
South Central	1									1	9			10	3									3	1	20			20	6	23	7
West Virginia																2								2		3			3		5	
Wyoming															1									1	2	4			4	7	5	9
Total U.S.	23	8	5	18		1	6	6	1	68	248	1	3	320	71	27	5	37	7	6	29	12	2	196	202	778	17	8	803	813	999	1015

GRAY

SYSTEMS OF WELL CONTROL

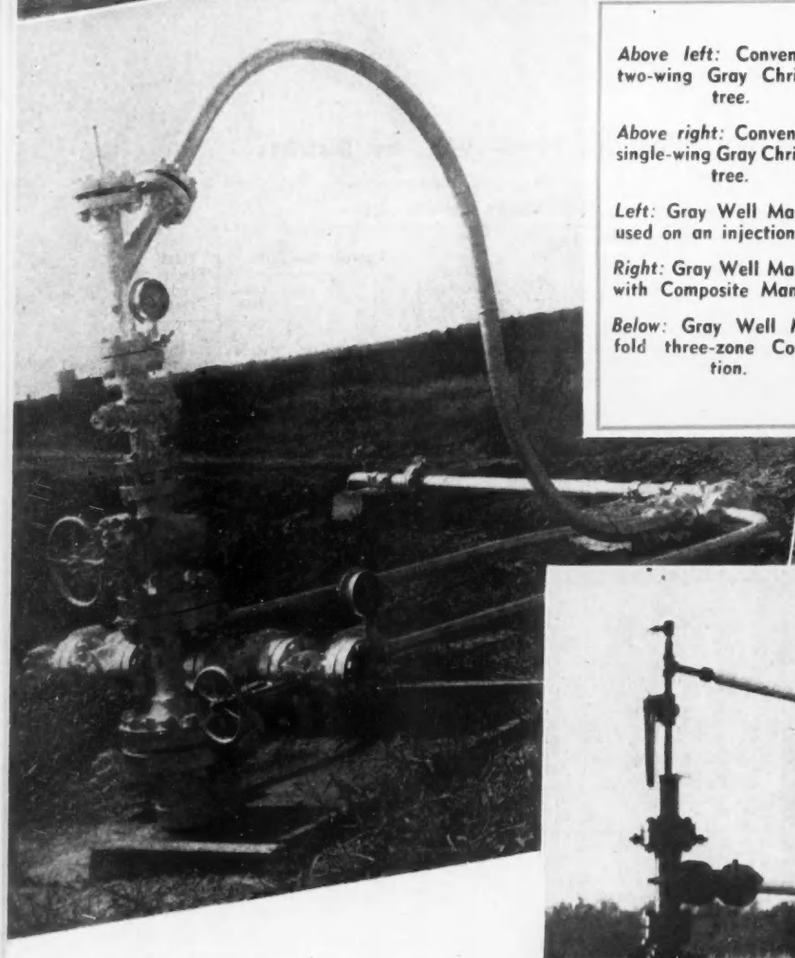
Above left: Conventional two-wing Gray Christmas tree.

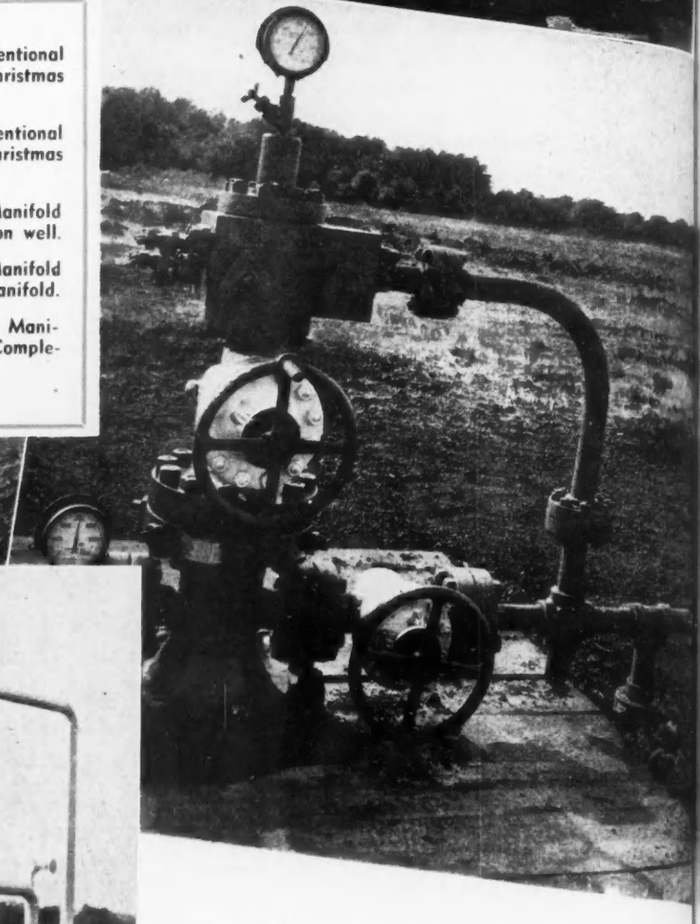
Above right: Conventional single-wing Gray Christmas tree.

Left: Gray Well Manifold used on an injection well.

Right: Gray Well Manifold with Composite Manifold.

Below: Gray Well Manifold three-zone Completion.





Rocky Mountain Area Representative:
CARL MOULDEN,
329 S. McKealey, Casper, Wyoming

Export Representative:
GUY E. DANIELS,
30 Rockefeller Plaza, New York City

GRAY TOOL COMPANY, HOUSTON, TEXAS

while 21.5 percent were producers in February. During the first quarter of this year the degree of success amounted to 19.6 percent, compared with 20 percent for the same period of last year.

The number of new sources of oil found thus far this year totaled 108, a decrease of 14.3 percent from the 126 discovered during the comparable period of 1945. The discovery of new oil fields decreased from 94 a year ago to 71, a drop of 14.5 percent, and the finding of new pay horizons in established fields totaled 37, a 15.6 percent increase over the 32 new pays found during the first three months of last year. Extensions to existing oil fields equaled the mark of 29 made during last year's period.

Distillate discoveries dropped from 13 last year to 11 for the current period, with the finding of new fields dropping 50 percent, while the location of new pays doubled last year's figure.

New gas sources amounted to 34, a 13.3 percent increase over the 30 discovered during the comparable period a year ago. New fields located during the two periods amounted to almost the same figure, and new gas pays showed a 75 percent increase. There were 12 extensions made to existing gas fields during the three-month period as compared with four for last year's first quarter.

Houston Oil and Houston Pipe Line Executive Reelected

Executives of the Houston Oil Company of Texas and its subsidiary, Houston Pipe Line Company, were reelected for another year at the annual directors meeting in the company's offices in the Petroleum Building, Houston, March 29. George A. Hill, Jr., was named president; L. S. Zimmerman, vice president and treasurer; R. R. Hobson, vice president and general manager; Charles A. Warner, vice president; A. H. Kennerly, secretary-auditor; H. W. Fairbrother, assistant secretary.

C. Lee Wood was re-elected vice president and general manager of the Houston Pipe Line Company; W. H. Blades, general counsel; Blades, Chiles, Moore & Kennerly, general attorneys.

Mississippi Oil Bills

Many bills affecting the oil industry were introduced but the Mississippi State Legislature adjourned last week with only three of them passed.

One exempts drilling rigs from ad valorem taxation, another exempts all non-producing interests upon oil, gas and other minerals, and also non-producing severed mineral and royalty interests therein from ad valorem taxation. This same bill also levies a county mineral documentary tax or transfer fee to be paid on leases and instruments creating and transferring several interests in non-producing gas, oil, or other minerals.

The third bill provides that the state will reserve one-half of the mineral rights when tax-forfeited lands are resold.

East Texas Pressure

An increase of .51 pounds in the average bottom-hole pressure of the East Texas field was reported by the Railroad Commission for March. Average bottom hole pressure on April 1 was 1015.85 pounds.

New Oil and Gas Fields and New Pay Horizons Discovered in the United States in March, 1946

Also Important Extensions to Established Fields

COUNTY	FIELD	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	[1]Name, Character and Age of Producing Formation	[2]Initial Production Method and Choke	Gravity of Oil	[3]Structure: [4]Method of Discovery	Tentative Evaluation of Discovery or Extension (Opinion of Relative Importance of Area from General Viewpoint of the Industry Based on Pertinent but Necessarily Incomplete Data: Later Development or More Complete Data Obviously Might Require Revision of this Tentative Opinion).
Wayne	Cisne	**ILLINOIS—Oil Field Extension** J. J. Lynn's Dye 1, n nw nw 2-1s-7e, ¾ mi se ext.	2-13-46	3-12-46	3166	3148-3159	McClosky i; Miss	F 256	....	.....	Already offset by prod to n and sw, with dry holes to e and se.
Butler	.....	**KANSAS—New Oil Fields** Nadel & Gussman's Crowley 1, sw sw se 11-28s-6e, btw Weaver and Fox-Bush pls.	.....	3-15-46	2738	2700-2738	Bartlesville sd; Penn	P 75	41	Ant; seis	Fairly gd strike; sd well saturated; well may link Weaver and Fox-Bush pls to prv abt 1000 acs.
Phillips	Logan	Helmerich & Payne's Bowman 1-A, nw nw se 3-5s-20w, abt 3 mi n of Hanson pl.	.....	3- 7-46	3554	3149-3176	Lansing li; Penn	F 201	41	Ant; seis & sub	Fairly gd strike at nw end of Kansas Uplift; well could have produced from Arb. li 3880-87 but wtr broke in after aciding; Prod acge may cvr 2 or 3 sects.
Rooks	Nyra	Atlantic Refining's Carmichael 1, c se ne 16-9s-17w, abt 2 mi w of Westhusin pl.	.....	3-28-46	3547	3429-3435	Lansing li; Penn	P 45; 20 wtr	....	Ant; seis	Unimp; sma struct on top of Barton Arch.
Rooks	Webster	Bird & Boering's Veverka 1, sw sw 27-8s-19w, abt 1½ mi nw of Barry pl.	.....	3- 2-46	3409	3403-3409	Arbuckle li; Cam	Sw 648	38	Str trp; dr	Gd disc; structurally test is normal with Barry pl; cannot be consid posbl ext because of strat type trp which can only be prvd in ext by dr; little sur geol.
Saline	.....	Currier & Keys' Crawford 1, se sw ne 18-14s-2w, abt 1 mi n of Salina pl.	.....	3-30-46	3275	3268-3275	Viola li; Ord	P 59	39	Ant; sub	Fair; struct possibly small.
Barber	Skinner	**KANSAS—New Oil Pay** Sinclair-Prairie Oil Co.'s Oldfather 1, cne ½ 7-31s-14w, in Skinner pl.	.....	3-27-46	4495	4422-4426	Simpson sd; Ord	F 3000	41	Str trp; dr	Well originally comp in 1945 as Arb prod; Viola zn prods gas.
Barton	Feltes	**KANSAS—Oil Field Extensions** Phil-Han Oil Co.'s Schauf 1, se sw nw 10-16e-12w, ½ mi sw ext.	.....	3- 1-46	3304	3109-3113	Lansing li; Penn	P 215	39	Ant; sub	Proves abt 400 addit acs.
Cowley	Rahn	Continental's Cox 1, nw se sw 5-34s-6e, 1 mi ne ext.	.....	3-26-46	2875	2850-2875	Bartlesville sd; Penn	Sw & F 125	39	Ant; seis	Bartlesville ed has gd permeability and porosity.
Ness	Arnold	Sohio's Holy Cross 1, csw sw 23-16e-25w, 1 mi e ext.	.....	3-23-46	4549	4531-4549	Mississippi li; Miss	P 1508	39	Ant; seis & sub	Imp ext prvng approx 700 acs; well assigned top state potential of 3000 bbls. oil daily.
Barber	.....	**KANSAS—New Gas Fields** Continental's Skinner 1, se ne se 33-31s-16w, abt 4 mi w of Skinner pl.	.....	3-23-46	5167	4697-4720	Mississippi li; Miss	F 1.86 mln	....	Ant	Fair strike.
Kearny	.....	Glenn Smith et al's Smalley 1, nw sw ne 3-25s-38w, abt 7 mi w of Hartland.	.....	3-25-46	4640	2385-2396	Krider sd; Perm	F 6.08 mln	....	Ant; seis	Apparently a sma struct analoguos to similar gas pls 12 mi e.
Pratt	Stoops	Bridgeport Oil Co.'s Stoops 1, se se sw 7-29s-12w, 6 mi sw of Chitwood pl.	.....	3- 6-46	4731	4446-4452	Viola li; Ord	F 3.7 mln	....	Ant; seis	Undet; posbly sma struct; test was an old hole reopened folwng additl seis work predicated on Chitwood pl struct.
Caddo	.....	**NORTH LOUISIANA—New Oil Field** J. R. Querbes, Tr. et al's A. J. Mitchell Est. 1, c nw nw 8-18n-16w.	10- 1-45	3-20-46	6306	5895-5905	Travis Peak sd; L. Cret	P 15	....	.....	.....
Bossier	Bellevue	**NORTH LOUISIANA—Gas Field Extension** Burford & Barnes' Lodwick Lbr. Co. 1, 18-19n-11w, 1 mi w ext.	12-23-45	3- 4-46	2823	1955-1965	Ozan sd; U. Cret	F 0.73 mln	....	.....	.....
Jefferson	Bayou la Fleur	**SOUTH LOUISIANA—New Oil Field** Calif. Co.'s E. P. Brady et al 1, 66-16s-24e.	12-11-45	3-12-46	10679	9363-9370	Miocene sd; Mio	F 300; 0.1% wtr; ¼	38.7	SD; Refl.seis	Important discovery.

New Oil and Gas Fields and New Pay Horizons Discovered in the United States in March, 1946

Also Important Extensions to Es oblished Fields

COUNTY	FIELD	COMPANY, WELL AND LOCATION	Date Spudded	Date Completed	Total Depth (Feet)	Completion Horizon (Feet)	[1]Name, Character and Age of Producing Formation	[2]Initial Production Method and Choke	Gravity of Oil	[3]Structure: [4]Method of Discovery	Tentative Evaluation of Discovery or Extension (Opinion of Relative Importance of Area from General Viewpoint of the Industry Based on Pertinent but Necessarily Incomplete Data: Later Development or More Complete Data Obviously Might Require Revision of this Tentative Opinion).
		SOUTH LOUISIANA—New Oil Pays									
Iberia	New Iberia	Humble's Mayo Romero 2, 49-12s-7e	1- 6-46	3- 5-46	9844	9660-9690	Miocene sd; Mio	F 65; 1/64"	34	SD; seis	2nd dp zone in fld.
St. Landry	Port Barre	Pan American Prod. Co.'s H. L. Garland 16, 4-6s-5e	10- 5-45	2-21-46	10375	8980-9055	Miocene sd; Mio	F 500; 1/4"	35.4	SD; seis	Important discovery.
St. Mary	Belle Isle	Sun's Belle Isle Corp. 9-A, 2-18s-10e	8-24-45	3- 6-46	10405	8109-8135	Miocene sd; Mio	F 52; 1/2"	34.5	SD; seis	Unimportant.
St. Mary	Jeanerette	R. J. Caraway's Gustave Hebert 1, 37-13s-9e	9-27-45	1-29-46	8146	7410-7440	Miocene sd; Mio	F 168; 15% wtr; 1/2"	36	D; seis	Proven ne sma. Probable sma lense sect.
		SOUTH LOUISIANA—New Gas Pay									
St. Mary	Belle Isle	Texas Co.'s State 340-Atchafalaya 4, T-18s-10e	11- 1-45	2-15-46	10653	9790-9800	Miocene sd; Mio	F 2 mln; 1/2"	....	SD; refl. seis	Gas outlet difficult. Ar may not be active for mos.
		MICHIGAN—New Oil Field									
Bay	Mt. Forest	Sohio and National Assoctd's State 1, se ne ne 1-17n-3e, 6 mi s Adams fld	12-14-45	3- 2-46	2970	2954-2959	Dundee li & dolo; Devo	P 16	....	Ant; geol	.....
		MISSISSIPPI—New Oil Field									
Adams	.....	Roeser & Pendleton-Sohio's Baker-Maier 1, nwc 34-6n-2w, 8 mi se of Natchez	9-21-45	2-18-45	10673	10524-10548	Basal Tuscaloosa sd; U Cret	F 97; 400 wtr; 1/4"	39.2	SD; seis	Import of disc is questionable at pres in view hvy salt wtr input. More will be known after well is reworked.
		MISSISSIPPI—Gas Field Extension									
Jeff Davis	Gwinville	Gulf's Vinnie Walker 1, nwc ne sw 34-9n-19w, 1/2 mi sw ext	12- 5-45	2-22-46	9352	7682-8100	Eutaw-Tuscaloosa sd; U. Cret	F 31 cond; 4.125 mln; 1/4"	50.2	SD; seis	Unimportant.
		OHIO—Gas Field Extensions									
Morgan	Bloom, N	Stephens Pet. Co.'s Ross Robinson 1, Sec. 3, N. Bloom Twp. 1/2 mi ne ext	.....	3- -46	4418	4387-4417	Clinton sd; Sil	F 4.0 mln	....	.....	.....
Stark	Bethlehem,NE	East Ohio Fuel Co.'s N.E. Shearer 1, Sec. 3, Bethlehem Twp. 1/2 mi w ext	.....	3- -46	4477	4452-4476	White Clinton sd; Sil	F 1.12 mln	....	.....	Shut-in after being shot.
Stark	Richville	Wm. Pfeiffer's I. F. Wagner 1, sec. 32, Perry Twp. 1/2 mi w ext	.....	3- -46	4275	4249-4272	White Clinton sd; Sil	F 1.4 mln	....	.....	.....
		OKLAHOMA—New Oil Fields									
Creek	.....	Springer & Bates' Book 1, nw nw ne 35-15n-8e, btw Deep Fork & N. Tibbens pls.	.....	3- 4-46	3827	3819-3827	Wilcox sd; Ord	P 115	41	Ant; dr	Fairly gd strike; struct expected to cvr sma ar; productivity of sd expected to compare with other gd Wilcox sd prods.
Hughes	Holdenville	W. N. Bartlett's Harjo 1, ne nw se 6-7n-9e, abt 1 1/2 mi n of Holdenville	.....	3- 1-46	3698	2826-2851	Booch sd; Penn	P 20	....	Ant; Seis & sub	Fairly gd; structural ext undet.
Hughes	.....	O. H. Grimes' Meadors 1, sw se se 23-8n-10e, 4 mi se of Yeager pl	.....	3-26-46	3435	3405-3435	Cromwell sd; Penn	F 1200	42	Ant; seis & sub	Imp strike; well showed 30 mln ft gas before being comp as oil disc.
Lincoln	Parkland, E	Olson Drilling Co.'s Wilson 1, ne se sw 20-16n-5e, abt 3 mi n of Kendrick pl	.....	3- 2-46	3546	3502-3540	Prue sd; Penn	F 253	39	Ant; seis	Imp disc; Prue sd porous; recvy indicated excelnt.
		OKLAHOMA—New Oil Pay									
Cleveland	W. Moore	Sinclair-Prairie Oil Co.'s Theimer 2, swc se sw 20-10n-3w	.....	3-25-46	8054	8030-8050	Hunton li; Devo	F 580	....	Ant; dr	Adds 3rd commrcl prodng horiz to pl; other zns include Burgess and Wilcox sds.
		OKLAHOMA—Distillate Field Extension									
Grady	Chitwood	Magnolia Pet. Co.'s Britt Unit 1, se nw sw 3-4n-6w, 1 mi s ext	.....	3-22-46	10984	10645-10984	Basal Penn sd; Penn	F 15.0 mln	....	Ant; seis & sub	Apparently confirms southwd trend of big Chitwood struct; prvs additl 600-800 acs; well appears richer in dist than pl's disc, Magnolia's Cunningham 1, se ne 33-5n-6w.
		OKLAHOMA—New Gas Fields									
Garvin	.....	Sohio's Tolbert 1, ne nw ne 9-3n-1w, abt 6 mi e of Antioch	.....	3-26-46	4589	4535-4540	Simpson sd; Ord	F 5.25 mln	....	Ant; seis	Undet; is interesting and commands attention; well shwd a little oil during prev tests.
Seminole	.....	C. R. Ross' Hall 1, nw se se 3-9n-8e, 2 mi w of Olympic pl	.....	3- 1-46	2382	2370-2382	Gilcrease sd; Penn	F 3.25 mln	....	D; sub	Fair strike; points to continued activity along big Seminole Arch where shalwr sds are being developed.
Washita	.....	Atlantic Refg. Co.'s Hill 1, nw nw nw 25-8n-18w, abt 1 mi s of Rocky	.....	3-12-46	6500	6150-6235	Penn sd; Penn	F 25.0 mln	....	Ant; seis	Imp disc indicating prod possibilities of lwr limb of Anadarko Basin.
		EAST TEXAS BORDER COUNTIES—New Gas Fields									
Harrison	.....	Midstates Oil Corp.'s J. M. Bryson 1, W. R. Anderson sur, 2 mi s Waskom	1-29-46	3-25-46	6243	5827-6162	Pettit li; Cret	F 8.0 mln	....	.....	.....
Shelby	.....	Humble's Pickering Lbr. Co. 1, St. Francois sur	9-28-45	3-26-46	10986	6608-6628	Travis Peak li; L. Cret Pettit li; L. Cret	F 11.5 mln F 1.84 mln; 1/4"	....	.....	.....
		EAST TEXAS—New Oil Field									
Cherokee	.....	Tom G. Shaw ,Trustee's J. H. Bolton-Pure 1, 2286 ft wel and 427 ft nsl of Chas. L. Widgeon sur., 8 mi w of Lone Star 2-pay fld, nearest prod	8-21-44	3- 1-46	4177	4171-4174	Woodbine sd; U. Cret	P 38; 140 wtr	39.8	Flt; geol	Unusually thin oil sd with heavy yld of gas before wtr broke in. Ar rated as excellent dp prospect will be given a Travis Peak test.
		EAST TEXAS—New Oil Pay									
Henderson	Opelika	Lone Star Prod. Co. et al's Ira Buckalew 1, 675 ft. snl and 920 ft from e and w lines of 52.7-ac lse, (N) Adrian Anglin sur.	11-11-45	3-19-46	9500	8827-8853 9351-9389	Rodessa sdy-li; L. Cret Pettit li; L. Cret	F 330; 1/4" F 15 cond/ mln; 35.0 mln; 2"	41.9	D; geol	Oil prod from flks of this lge struct anticipated because of abnormally high yld of cond. Extent of prod oil ar is speculative. 1st oil prod in gas-dist fld.
		NORTH TEXAS—New Oil Fields									
Jack	.....	Stephens Pet. Co.'s P. A. Jackson 1, 1181 ft. snl and 1267 ft ewl W. C. Ry Co. 1, A-904.	9-24-45	3-11-46	5253	4717-4727	Bend li; Penn	P 4	....	Ant; geop	Oil flow with consid gas evident prior to drilling thru pay and setting pipe low in sect.
Montague	.....	L. S. Youngblood and R. L. Foree's Joe Benton 2, 3716 ft nsl and 6017 ft ewl of Abel A. Lewis sur., A-420, 2 3/4 mi s Benson 3-well pool, nearest	2- 8-46	3-22-46	6243	6132-6142	Bend cgl; Penn	F 3132; 3/4"	43	Ant; geol	Potential based on 2-hr natural test; situated 1350 ft ne of a failure. Oil saturated li in top 24 ft of Bend not tested.
Wilbarger	.....	Paradise Oil Co. et al's W. T. Waggoner Est. 1-G, c e1/2 se se H&TC Ry, 39, blk 2, 2 1/2 mi sw of Rock Crossing fld.	1-26-46	2-28-46	4652	4502-4516	Ellenburger dolo; Ord	F 504; 3/8"	40	Ant; geol	Sharp struct with 218 ft of thinning btw Strawn and Ellen when correlated with failure 1 1/8 m s by e. Shallower pays due, and likely a substant prod ar.

		NORTH TEXAS—New Oil Pay										
Clay	Heard	L. T. Burns et al's J. E. Ford 1, 467 ft. out of sec of ne¼ sec. 3221, TE&L Co. sur., 3⅝ mi nw of Ellenburger disc.	1-22-46	3-22-46	6701	5751-5761	Bend li; Penn	F 560; ½"	45	Ant; geol	Pay will be erratic; altho present and passed up by field's Ellenburger disc.
		WEST CENTRAL TEXAS—New Oil Fields										
Coleman		Fulwiler & Hughes Drlg Co.'s T. Templeton 1, 450 ft snl and 330 ft ewl HT&B Ry. 8, blk 1.	2- 6-46	3-15-46	3487	3457-3487	Strawn (Gray) sd; Penn	F 1135; 1½"	45	Ant; geol	Unusually thick oil sd for zone; near 10,000 bbls per ac yld. Prod ar comparatively small.
Shackelford		Allied Oil Co.'s L. A. Sanders 1, 467 ft out of e c sec., 583, TE&L Co., sur.,4 mi ne of Albany.	9-18-45	3-18-46	4540	4535-4540	Ellenburger dolo; Ord	F 543; 24 wtr 2"	42.6	Ant; geol	Comparatively thin pay abv wtr table. Considered small prod ar.
Shackelford		Hedrick Oil Co.-Jones & Stasney's Dawson & Conway 1, nw ne nw E.T.Ry. Sec. 195, 3000 ft e of prod & separated by a failure.	2-12-46	3-10-46	1568	1561-1568	Bluff Creek sd; Penn	P 21	36.6	Ant; geol	Small productive area.
Shackelford		Phillips Pet. Co.'s Ace Hickman-Pan 1, 944 ft nsl and 1665 ft wel of ne¼ Sec. 16, Lunatic Asylum Lands, 1½ mi w of Sedwick; btw shalw pls.	12-20-45	3- 7-46	4220	4210-4220	Ellenburger dolo; Ord	F 1420; ½"	44.8	Ant; geol	Considered small prod ar; abt 8000 bbls per ac yield.
		WEST TEXAS—New Oil Pays										
Andrews	Martin-Ellenburger	Humble O. & R. Co.'s J. F. Parker 2, c nw nw psl 23, blk A-41, se offset to Basal Clear Fork prod.	11-19-45	3-15-46	8880	8850-8865	Ellenburger dolo; Ord	F 1594; ½"	42.3	Ant; geo	Correlates 179 ft high to Ellen failure ½ mi w that was plugged back for Simpson (McKee) sd disc. Gas-oil ratio is subnorm and the oil is classed as sour. This is 3rd well and 3rd pay for area.
Winkler	Emperor-Holt	Texas Pacific Coal & Oil Co.'s Brown-Altman 1, Lse 4, c sw sw psl 25, blk B-5, se offset to 2350-ft gasser.	12-10-45	3-12-46	6255	4765-4810	Holt (Gloriette) li; Perm	F 265; 5/64"	40.1	Ant; geol	Substantial prodng ar, trending nw-se; broad and flat on top with steep dip on flks. Lse ownership so divided that abt 12 tests will result this year.
		WEST TEXAS—Oil Field Extension										
Hockley	Levelland	Stanolind's Mike Veretto 1, 440 ft out of nwc Labor 7, League 72; Val Verde c.s.l., 2¾ mi se ext.	1- 5-46	3-15-46	4889	4750-4853	San Andres li; Perm	F 343; 30 wtr 1½"	30.6	Ant; geol	Top of San Andres correlates 8 ft low to nrst prod; 1st flowing well. Previous wells distributed over lge area; all small pumpers.
		UPPER TEXAS COAST—New Oil Field										
Chambers	South Mayes	Humble's Lula Wallis et al 1, 6500 se prod on 200-ac lse, Samuel Mather sur, blk 13, tr 1.	12-29-45	3- 9-46	10010	9194-9200	Frio sd; Olig	F 185.45; 0.2% wtr; 3/64"	36.6	D; seis	.....
		UPPER TEXAS COAST—New Oil Pays										
Ft. Bend	Needville	W. L. Goldston's E. C. Farmer 5, 1130 fr sw&nwl 250-ac tr, Robert Hodge sur.	2- 6-46	3- 1-46	6700	6660-6690	Frio sd; Olig	F 146.55; ⅛"	28.2	D; seis	.....
Liberty	Liberty, S	F. J. Bashara's H. L. McGuire 2, 10.44-ac lse, M. G. White sur, 201 sw well 1	2- 2-46	3-16-46	3796	3299-3310	U. Frio sd; Olig	F 198; 1.4% wtr; ⅛"	22.4	D; seis	100 ft higher than nearby wells—may encourage other tests.
Matagorda	Sugar Valley	Superior-John Blaffer's Sadie E. Thomasson 1, 166-ac lse, P. Burnett & A. Sojourner sur.	2- 1-46	3-21-46	10100	9083-9097	"T" Frio sd; Olig	F 422.56; 4/64"	35.4	D; seis	Not extensive—pay in same Frio prod. zone.
						8761-8786	"C" Frio sd; Olig	F 71; 3/32 mln	55.7		
		UPPER TEXAS COAST—Oil Field Extension										
Colorado	Sheridan	Grubb & Kawkins-Lone Star Prod. Co.'s Ruth E. Powers 1, 574-ac lse, Mrs. S. W. Garnett sur, e ext.	12-13-45	3-23-46	10456	10130-10362	"L" Wilcox sd; Eoc	F 145; 2.34 mln; ¼"	59.4	Flt; seis	Probable extended lense sect.—same horiz as field pay.
						9318-9372	"Q" Wilcox sd; Eoc	F 132; 4.25 mln; ¼"	49.3		
		UPPER TEXAS COAST—New Distillate Fields										
Liberty	McCoy	Ohio Oil Co.'s Kirby Lbr. Corp. 1, 61-ac tr. 5, Jas. McCoy Lge.	11-18-45	3- 5-46	10285	9107-9135	Wilcox sd; Eoc	F 52; 18% wtr; 1.17 mln; ⅜"	54.1	D; seis	.....
San Jacinto		Fred M. Manning's Central Coke & Coal Co. 1, c 40-ac unit on 1533.4-ac lse, J. Ferguson sur, 2½ mi sw Mercy fld.	11-27-45	2-24-46	11001	8310-8350	Wilcox sd; Eoc	F 14; 11/64"	50.2	Flt; seis	Unimportant—same level as Mercy field.
Trinity		Magnolia's Bolton 2, 5000-ac lse, Henry Bond Lge, c lot 80, s sw Navarro's Bolton 1.	6-15-45	3- 8-46	12505	10500-10535	Edwards li; L. Cret	F 24; 0.5 mln; 5/32"	51	Flt; seis	.....
		UPPER TEXAS COAST—New Distillate Pay										
Harris	Tomball	Humble's Ed. F. Milo et al 10, 213.27-ac lse, C. N. Pillot sur.	12-31-45	3-27-46	15542	6146-6163	Cockfield sd; Eoc	F 38; ¼"	51.8	D; seis	Unimportant
		LOWER TEXAS COAST—New Oil Pay										
Dewitt	Yoakum	Pure's A. F. Karl 1, 78.33-ac lse, John May sur, ½ mi s Rice 1, disc well, gas-cond.	11- 1-45	3-12-46	11334	8660-8670	Wilcox sd; Eoc	F 38; 52% wtr; ½"	37.6	Flt; seis	Not extensive at present.
Karnes	Fall City	Southern Minerals Corp.'s L. A. Faires 4, 255.24-ac lse, Louis Manchaca gr, 956 sw Faires 3.	2-14-46	3- 2-46	5002	4887-4898	Gov't Wells sd; Eoc	F 20; 2/64"	48.2	Flt; seis	Unimportant.
Lavaca	Hope area	Sterling O. & R. Corp.'s R. H. Goodrich 1, 640-ac lse, German Immigration Co. sur, 19 mi se Yoakum.	.....	2-25-46	11014	10778-10940	Wilcox sd; Eoc	Sw 1	52.5	Flt; seis	Rig moved off. Will complete later in 8900 ft sd.
Nueses	Minnie Bock, N.	Atlantic's Jas. H. Ewing 2, 219-ac lse, M. Lopez de Herrera gr, 1629 se Ewing 1 gas disc well.	1-11-46	3- 2-46	8495	6218-6240	Frio sd; Mio	F 188; 5/32"	37.5	Flt ant; seis	Important—good sand.
Victoria	Heyser	Magnolia's O. M. Lander 1, (OWWO) 38.43-ac lse, J. E. Galban sur, 318 sw No. 3.	2- -46	3- 6-46	7444	7119-7126	Frio sd; Mio	F 48; 108 wtr; 7/64"	46	Flt; seis	Unimportant.
		LOWER TEXAS COAST—New Distillate Fields										
Bee	Strauch-Wilcox	Mills Bennett's Martha Berger et al 1, 660 fr el 660 fr swl at ra of w½ sect 19, 152.6-ac lse, J. M. Uranga gr.	10-27-45	3- 1-46	8890	8082-8143	Luling sd; Eoc	F 192; 6 mln; 1/4"	....	Flt; seis	Deepest producing formation in county.
Victoria	Welder Ranch	Sterling O. & R. Corp.'s J. J. Welder 2, 11,371.89-ac lse, S. A. Belding sur on 640-ac blk.	2- 1-46	3-12-46	5750	5690-5713	Frio sd; Mio	F 40; 1.7 mln; 1/8"	....	Ant; seis	Good gas-dist dicsovery.
		SOUTH CENTRAL TEXAS—New Oil Field										
Milam	Holcomb	R. L. Reynolds et al's J. L. Byrd 2, 1320 fr nwl 1551 fr swl 189.1-ac lse, J. J. Acosta gr, 468 ne Byrd 1 dry hole.	2-21-46	3- 1-46	1884	1210-1220	Austin ch; U. Cret	P 55	34	Flt; gra	Unimportant.

[1] Character of producing formations abbreviated thus: ch, chalk; dolo, dolomite; li, limestone; sd, sandstone; sh, shale; ser, serpentine; cgl, congolmerate. Ages of formations abbreviated thus: Pleis, Pleistocene; Plio, Pliocene; Mio, Miocene; Olig, Oligocene; Eoc, Eocene; U. Cre, Upper Cretaceous; L. Cre, Lower Cretaceous; Jur, Jurassic; Tri, Triassic; Perm, Permian; Penn, Pennsylvanian; U. Miss, Upper Mississippian; L. Miss, Lower Mississippian; Devo, Devonian; Sil, Silurian; Ord, Ordovician; Cam, Cambrian.
[2] Barrels of oil per day (24 hr. rate), flowing (F), pumping (P), swabbing (Sw), or bailing (B); or million cubic feet of gas daily open flow capacity; size of choke given in inches. [3] Type structure abbreviated as follows: Ant, Anticline; D, Dome; Fld, Fold or Folded; Flt, Fault or Faulted; M, Monocline; N, Nose; SD Salt Dome; Str trp, Stratigraphic trap; Syn, Syncline; Ter, Terrace. [4] Method of discovery abbreviated as follows: cd, core drilling; dr, drilling; geol, geology; geop, geophysics; grv, gravity meter; ran dr, random drilling; seis seismograph; sub, subsurface geology; sur, surface geology.

Effective Management

Part 2

Coordination and Controls

By G. M. FITZGERALD
Card, Fitzgerald & Leghorn, Management Consultants—Engineers

IN DEVELOPING the overall plan for administering a business enterprise, the prime requisite that must be provided is adequate planning. Planning substitutes knowledge for guesswork. Planning for any business enterprise must operate at every level of the organization. However, the master planning must begin with the top management. Master planning usually takes the form of policy determination. The word policy is a broad term and used somewhat loosely. For our purposes it would be considered as primarily a means of coordination and control. Management planning through policy-making governs the actions of the business.

Policies may be considered of two types. First, the basic business policies, and second, the actual operating policies. Basic policies are usually the long range, established objectives of the company. In most cases, the basic policies were formulated upon the founding of the business itself. Every organization is built around a specific purpose. These basic policies outline and define that purpose. An example of such policies may be the decision as to what products or service to provide and at what price level, or the determination of the company's wage scale, or the method of distributing the company's product. The formulation of such policies as these are usually the sole responsibility of the board of directors. It is the responsibility of the chief executives of the company to interpret these policies and in turn formulate the operating policies of the company.

Operating Policies

The operating policies of a company are the most common and most direct results of management planning. These policies deal directly with the active operating of the business. Their primary purpose is to state in advance the particular action to be taken in certain repetitive situations. Operating policies, when carefully formulated, make it unnecessary for the various levels of management to continue to handle each repetitive situation. Where the operating policies of the company are not clearly formulated or in written form, the one-man organization usually holds forth. It is not hard to find examples of such organizations. Every move, every decision and every detail of the business must come under his personal supervision.

It is not hard to imagine the chaos that can come to a one-man organization when the dominating force is removed. If a business of any size is to be conducted successfully, each delegated officer must be put on his own. Responsibility, authority and accountability must be equally balanced. It is obvious that one man cannot control every detail of a sizable business. This can be illustrated by the general manager of a company employing several thousand people. The general manager insisted on personally passing on every wage increase. He would not delegate this responsibility to his department heads. The superintendent did not have the authority to give a clerk a $10 a month increase. The superintendent had to obtain approval of the general manager. In most cases the manager did not know the employe and certainly could not fairly pass on the recommendation. On the other hand, the general manager had never given a thought to the ordering of expendable tools and equipment. The superintendent could commit the company to several thousand dollars in a simple purchase of equipment. Thus, while the superintendent was not considered capable of passing on a $10 a month increase for a clerk, he could spend thousands of dollars unquestioned on supplies. This lack of balance in delegation of responsibility is quite common even in established organizations.

Many progressive firms have developed standard practice instruction manuals that clearly express the operating policies of their company. Standard practice instructions are of great value to every executive level and to all employes. The very operation of devising standard practice instructions often serve to clarify the particular procedures being outlined. Successful practice has proven that standard practice instruction should be written under the following conditions:

1. Each standard practice should clearly state the extent of the policy covered.

2. Each standard practice should be the distinct responsibility of an operating executive.

3. The instructions should be written in sufficient detail so that every member of the organization will interpret the instruction in the same way.

Adequate planning that substitutes knowledge for guesswork is vital to the success of any business enterprise.

4. It must be made clear that the standard practice manual does not restrict intelligent action. Each instruction is always open for review and improvement by any member of the organization.

5. Each instruction should be periodically checked by an impartial source to determine that the procedures and controls are properly functioning.

Once procedural standards are established, responsible executives are relieved of making further routine decisions. This will give each executive opportunity to devote proper time and thought to overall planning and coordination of the business activities. Some executives object to written procedures as they involve "too much paper work." Specific written instructions have always proven the best means of cutting red tape.

A policy manual should never be restricted in its distribution or use; rather every employe should be encouraged to read the instructions. Instructions should be issued centrally in the organization. Every responsible employe representing management should receive a copy. In some companies only those standard practice instructions pertaining to his particular department are given to the department head. In other companies, all the instructions are issued to all the department heads. The latter plan has considerable merit. While one department head may not be directly concerned with the work of another department, his knowledge of that department may prove valuable in his own work.

Responsibility for Manual

The preparation and the continued maintenance of the manual is not a clerical job. It requires the attention of an executive type person. If the company is large enough, it may well be a full-time position. In a smaller company the responsibility may be delegated to an executive who has an overall company responsibility. Many companies centralize this activity in the position of internal auditor, or controller. Other businesses have made the office manager responsible for the manual. Operating policies should represent the best thinking of all the company's executives. Any department head may write an instruction covering a policy for his department. Such policies before release should be cleared through a policy committee before becoming effective. This will assure uniformity and coordination between departments. Some companies have hesitated to place their operating policies in writing be-

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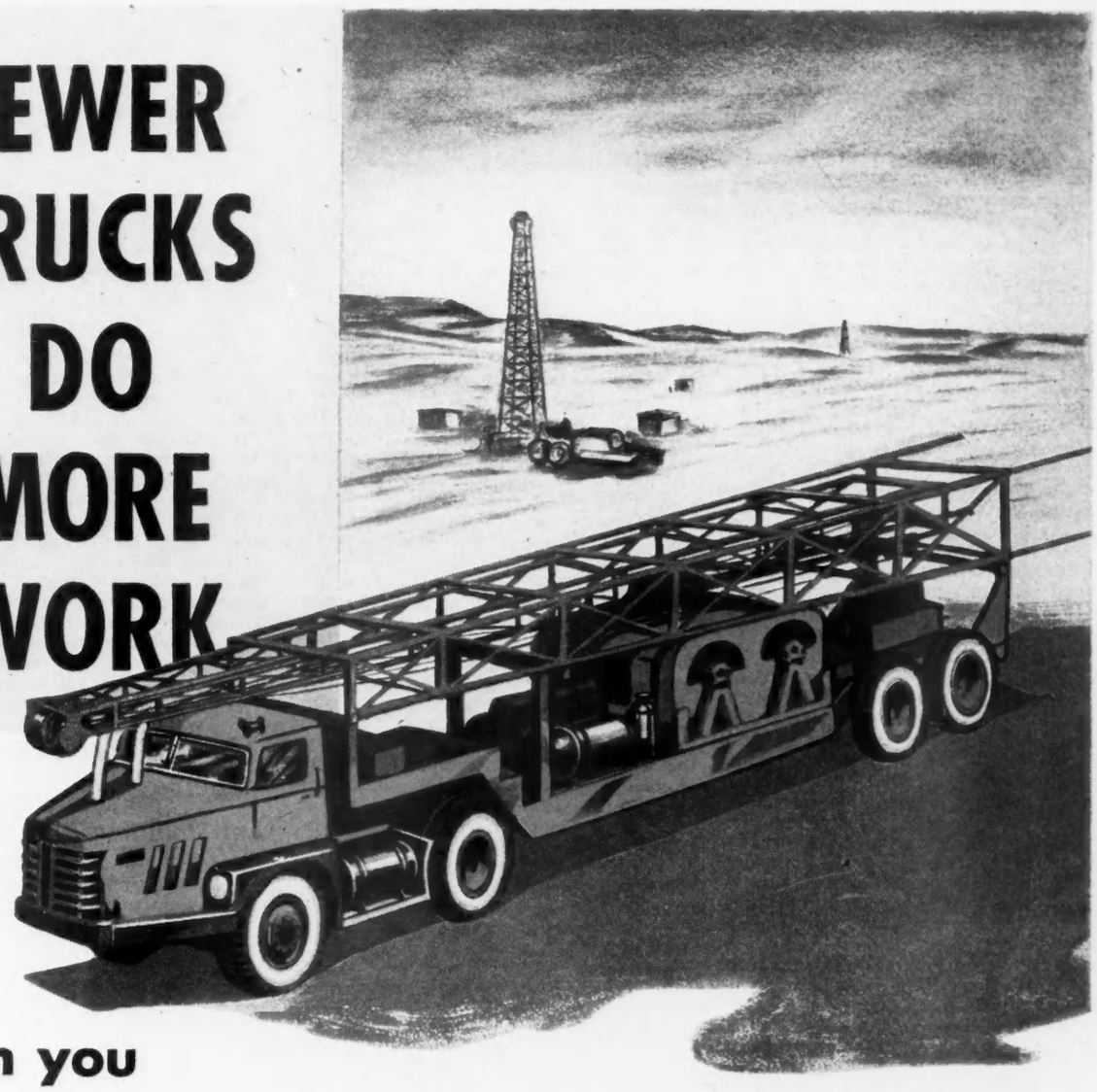

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cause they feel that the reason for the policy may not be clear to the employe. The reason behind the policy is unnecessary in the manual; it is the policy itself that is necessary.

There is one inherent weakness occasionally found in standard practice manuals. That is the failure to tie in the written standard to some means of positive control.

A detailed written instruction of operating procedures is of little value unless there is some means to make certain that the standard is carried out. For example: a clear-cut policy requiring supervisory approval on all overtime may be written. The written instruction may require the superintendent's or the office manager's approval. However, unless the payroll department is definitely instructed to pay only on properly authorized overtime, the entire instruction obviously is of little value. In setting up an operating policy it can in nearly every case be tied in to a control report. Intelligent planning will reveal that a system of coordinated, planned reports will assure each executive that his operating policies are being properly fulfilled. A chart of control reports can be simply prepared.

A planned coordinated system of control reports does not just happen. Such a system must be developed by careful study. When it is suggested that a system of reports be established, some executives point out that they already have too many reports and certainly cannot see the necessity of new reports. Usually it is true that there are already "too many reports." Every company should have a comprehensive survey made of its company forms, and reports made at least every two years. Any executive interested in cost reduction will find that considerable savings can be realized through a searching engineering analysis of the company's present forms and reports.

Due to war-time conditions and government controls, reports and forms have increased tremendously in the past few years. It is quite possible that some information is now being reported that is no longer required. This is particularly true in organizations that have grown considerably over a short period of time. It is surprising how many company executives are unaware of the volume of forms handled in their business. They will often tell you they have no unnecessary paper work. They sincerely believe that they see or know of all the reports and forms. One top executive of a local firm emphatically stated that the number of forms he used in his business did not exceed 60. An actual tabulation revealed that 137 forms were in active use.

Engineering Analysis

An impartial engineering analysis of every form and report may be made follow these basic inquiries:

1. Is the report necessary?
2. Who uses the report?
3. Of the information conveyed in the report, what is actually used?
4. Does the report show "historical" information, or up-to-date operating data? In other words, is the report issued when it still can do some good?
5. Does the report measure accomplishment or in some way indicate the trend of the data in relation to expected results? In other words, when is the report required, and when is it issued?
6. May the report be combined with other similar reports to advantage?
7. Is the report submitted to the proper authority for action.
8. Is it necessary to file the report; how many copies are filed and for how long?

All these questions may be fairly asked of any individual report, and the report may appear necessary by itself. However, when all the reports in the company are analyzed together, the management will be surprised at the overlapping, duplication, and the collection of useless information. It may be found, as it has many times in the past, that worthless information in reports are carried in the files for years. Other essential reports sent to the wrong authorities are often scrapped.

An example of information considered at the source as important but worthless from a management viewpoint, is a typical case on record: In a large processing plant one of the operations required was the opening of drums of special oil, and positioning and feeding them to a central process tank. When the drums were emptied, the operators trucked them to a scale to weigh them and record the weight. About ½ hour before quitting time the operators quit work in order to make up a report on the weight of empty drums. During an engineering analysis of the company's reports it was found that this report went to the superintendent's office, who forwarded it to the planning office, who forwarded it to the cost and statistical office, who filed it. Each department assumed that the other department had need of the form. It was finally determined that a few years ago the plant superitnendent wanted the figures for a test run. Unfortunately, the report was continued for years for no reason whatever.

The first fundamental report in any business enterprise is the profit and loss statement and balance sheet. This report and other similar financial reports are usually prepared as part of the financial statement. A common fault of management, particularly in smaller businesses, is the use of purely statistical and financial reports for purposes of operating control. Control reports to be used by management in operating an enterprise go considerably beyond the mere tabulation of information shown on the company's books.

Wherever practical, a control report should measure the efficiency of the data reported. Standards of accomplishment may be fairly established for every level of the line organization. Regardless of the activity, a measuring stick usually can be found. Variations from these predetermined standards measure performance. When the standard or budget is exceeded, quick management action is indicated. When the standard is bettered, proper recognition should be given for a good job. It is important to remember that control reports are primarily used for measurement and action. Fine accuracy is not usually required or even desirable for many controls. If an executive is interested in receiving a control report showing the dollar valuation of the company's inventory, he is not interested in pennies. Round figures to the hundreds of dollars may be sufficient.

Much has been said of "management on a principle of exception." Proven through practice, this principle is one that can be used profitably by every executive. As brought out to this point, management by exception is possible only when the organization is properly prepared as follows:

1. Sound key management organization.
2. Proper delegation of responsibility.
3. Clearly defined operating policies.
4. System of coordinated control reports.
5. Establishment of standards of accomplishment.

The larger the business the more impossible it is for any one individual to be constantly aware of all the operating details. A system of reports based on this principle places the emphasis on the interpretation of the use of the report's information, rather than the statistics that made possible the report. The bulk of the statistical and paper work is of no interest unless it is an exception which denotes the direction of action required. Finally, the intelligent operation of the company's business is dependent upon the exercise of good judgment and aggressiveness in tackling business problems. Every practical means that will assist the formation of good judgment is an essential business tool.

(This is the second of five articles. The third will appear next week.)

Anti-Pollution Bill

A federal water pollution control bill which would affect the oil industry was recently introduced in the House of Representatives by Rep. J. J. Mansfield (D., Tex.), and referred to the Committee on Rivers and Harbors.

The proposed act would empower any federal attorney to bring action to "prevent or abate" water pollution in navigable waterways caused by substances in either a "solid, gaseous or a liquid state."

Action would be brought only after interstate, state, and local authorities have been afforded an opportunity to prevent or abate such nuisance and failed to do so within six months after receipt of written notice from the Surgeon General.

Gulf Making Awards

More than 16,500, or 60 percent, of the employes have worked with Gulf Oil Corporation and subsidiary companies for ten or more years, J. Frank Drake, president of the corporation, reported last week in announcing the annual awards of emblems and certificates to personnel of long service. This year's awards, to be presented in ceremonies at offices, refineries, and oil fields, will go to 4161 employes.

Certificates of award will be forwarded to employes in the armed services, where years of service count toward the award.

Lone Star Plans

The Lone Star Gas Company is contemplating expenditures of $8,250,000 in new lines and other installations during 1946, President D. A. Hulcy reported to stockholders last week in Dallas. All officers and directors were re-elected.

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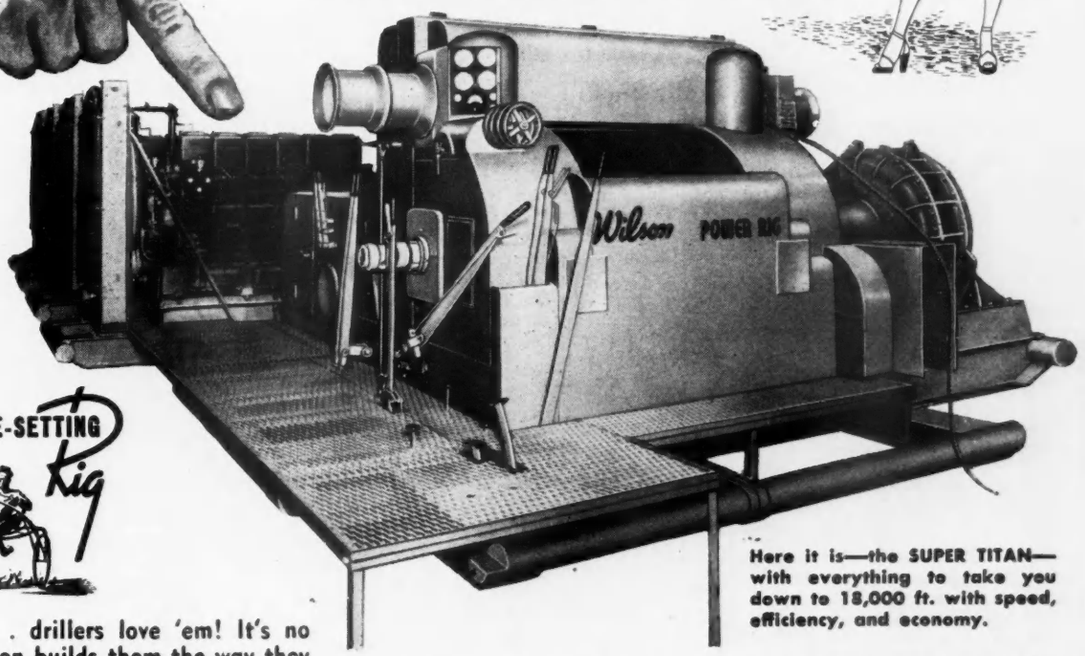

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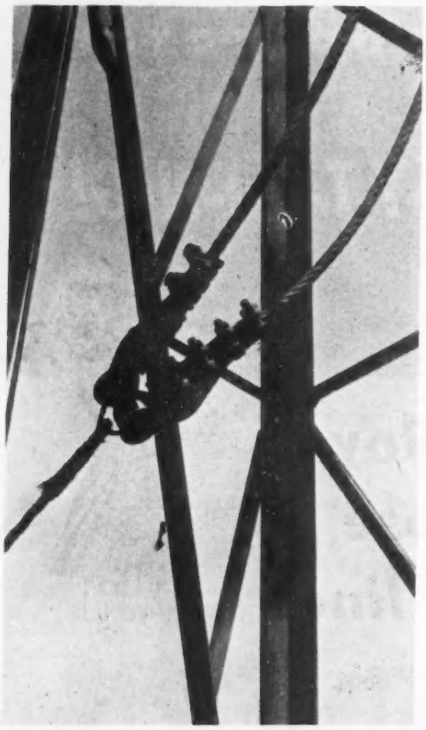
Spool and Soft Line Secure Horsehead Reins in Clear for Work-Over Operations



REIN CARE

On a large lease where pumping equipment and pulling conditions were approximately the same for each well, the foreman of one pulling crew devised a simple device for holding back the pumping unit horsehead reins so as to prevent their becoming fouled in the tubing line or sand line. To the end of a short length of soft rope was attached a steel ring and through this ring was inserted a small shop-made steel spool. The dimensions of the spool are such that it may be slipped through the steel loops at the end of the reins, yet, when they are pulled off to one side, as shown, there will be no chance for the reins to slip out until the line itself is released, or the spool removed.

Where formerly it took some time to lash the reins together and make some sort of temporary hook-up for tying them back, the present system enables the crew to do the job in only a matter of a minute or two. The other end of the rope is looped over any convenient part of the pumping unit frame.

Snubbing Valve Checks Possible Well Kicking

WELL SAFETY

In a field where bottom-hole pressure is not great enough to flow the wells, but may be sufficient to cause them to kick over at infrequent intervals, one company takes the precaution of installing in the tubing string at cellar floor level, an additional quick-acting valve which can be closed whenever rods are being pulled. The valve is positioned in such a way that it will cause least interference with men working around the well head, yet it is quickly accessible and easily closed off if the well should show signs of trying to flow by heads.

The small cost of the valve as compared to the damage that could be done is cheap insurance for the well and installations surrounding it.

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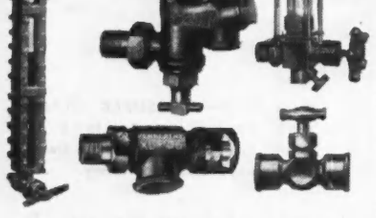
QUALITY
PRODUCTS



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See Pages 2450 to 2455 Composite Catalog

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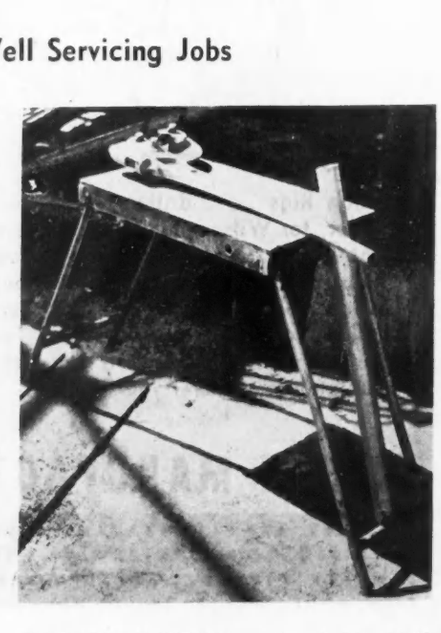
Collapsible Tool Rest Speeds Well Servicing Jobs

TOOL RACK

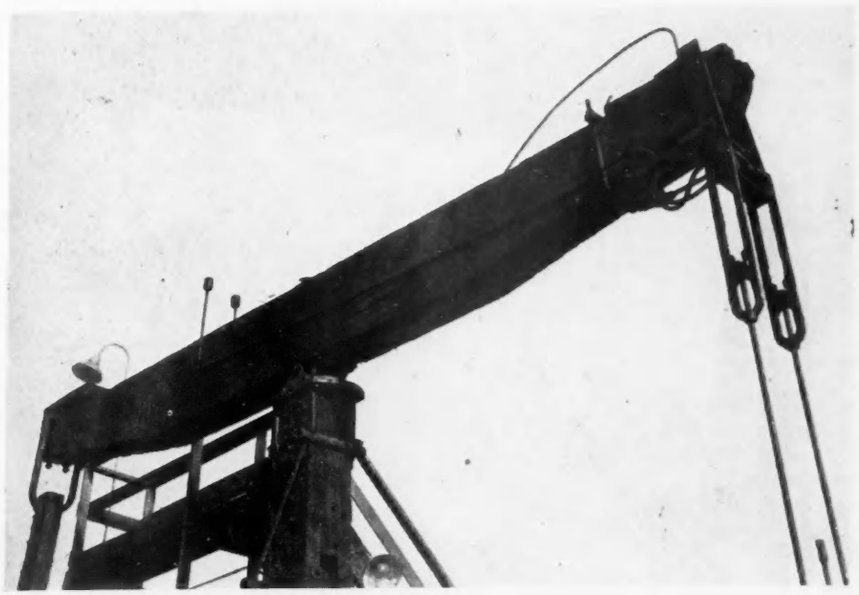
Helping to speed up pulling jobs, the small tool-rest table designed by the tool pusher of one production company is easy to move about the rig floor and is constructed to permit its being collapsed for easier stowage on the service truck. The bench portion is of all-welded construction measuring 12 inches wide by slightly over two feet long. The pipes forming the legs are hinged and are so designed that they may be collapsed into the box-like space underneath the table, one pair of legs being slightly narrower in construction than the other to nest.

Provision also is made for convenient racking of the much-used snipe. A nubbin of sucker rod material is welded to the horizontal spreader near the foot of the narrower pair of legs, the snipe being stood up over it as shown.



PRODUCTION HINTS

Flexible Hose Sections Absorb Oil-Lead Vibration



LUBE SYSTEM

To facilitate routine lubrication of the fittings on a steel horsehead adapted to the wooden type walking beam, one foreman installed a remotely-filled lube system which enables the pumper to oil the job in much less time and without necessitating crawling out on the end of the beam, risers terminating in oversize lube cups being fitted at the platform end of the lines near the sampson post. A foot or two from the horsehead, flexible composition hoses are attached to the ends of the pipe lines, the hoses connecting into fittings at the bearings. Beam vibration, being absorbed in the connecting hoses, thus is not transmitted to the lube fittings.

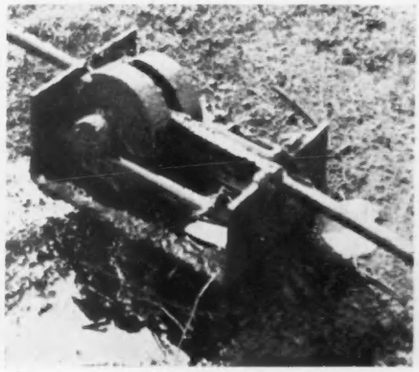
Shown also is the effective method employed in bracing the sampson post. Two 18-inch lengths of pipe were fitted with a pair of long stay-bolts and rigged on the post near the saddle bearing as shown. Other rods, bolted to the lower end of the pipe brackets, then tied to a secure footing at ground level and are cinched up tightly. The clamping action hold of this device improves the stabilizing quality of the tie-down, and permits the tie-down rod to be anchored closer to the bottom of the post instead of having to be extended out to the rear at a somewhat shallower angle.

Wooden Roller Guards and Supports Rod Line

ROD-LINE SUPPORT

In order to reduce to a minimum the friction of well rod lines lying close to the ground, one operator developed a small support which utilizes a wooden roller to carry the weight and movement of the rod, the roller travelling the length of the enclosure on a pair of horizontal rails as illustrated.

The device is easily built up in the shop, the materials consisting primarily of scrap sucker-rod and light steel plate, the latter being bent in the U-shape shown and having shallow guides cut into either end through which the pull rod passes. An occasional oiling is all that is needed on the moving portions and as soon as the wooden roller becomes saturated with oil, it becomes more or less self-lubricating. It provides an economical means of supporting rod lines in stripper areas where, due to remoteness and rough terrain, the pumper may not be able to service all the supports as regularly as might otherwise be desired.



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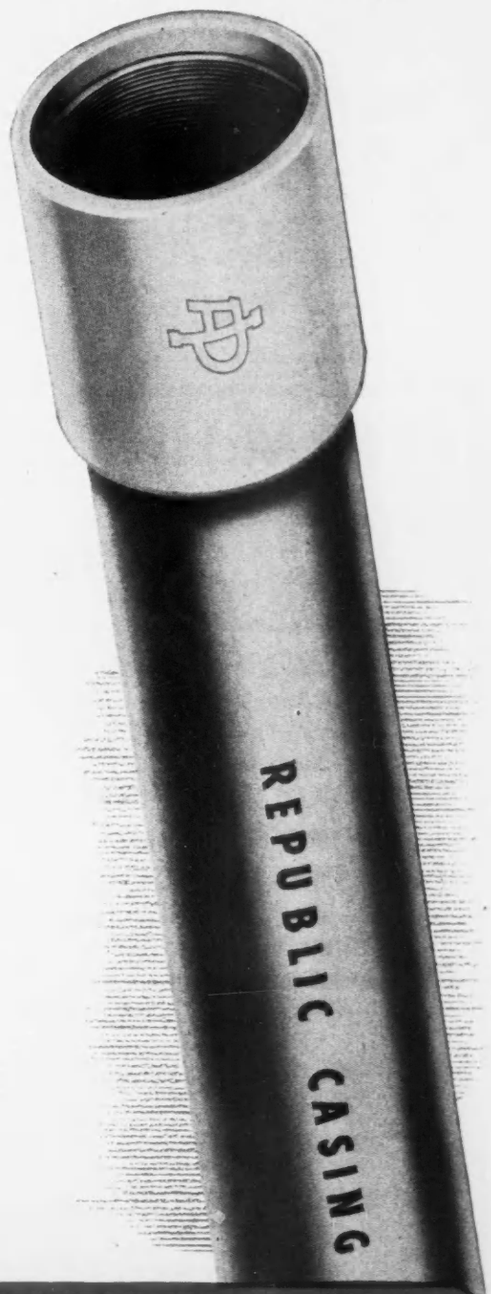
from Ore to Oil Field



Used in oil fields all over the world, under all kinds of operating conditions, Republic Electric Weld Casing has earned an unexcelled reputation—for uniformity—for outstanding performance—for substantial economy.

These qualities of Republic Casing are not happenstance. They are the results of exact production methods. Every manufacturing step, from the time the ore is mined until the pipe is fabricated and shipped, is under the careful control of one integrated organization.

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Talco to Provide Outlet for Merigale Field, East Texas

Talco Pipe Line Company will provide an outlet within 30 days for the Merigale 11-well field, Wood County sector of East Texas, through the construction of an 11-mile, six-inch line from the field to the Coke field, where connection will be made with its six-inch discharge line to Mount Pleasant.

Contract for the equipment and installation of the line has been given to Jos. Greenspoons Son Pipe Corporation.

The Merigale crude, which ranges from 29 to 31 gravity, will be consigned to the Mount Pleasant refinery of the Talco Asphalt & Refining Company. The latter has contracted to purchase all production from leases operated by Bobby Manziel for five years at the posted price, plus allowance of five cents per barrel for gathering. Manziel previously made plans to build a line from the field to the East Texas field and connect with a major company.

10½-Mile Mississippi Line Completed by Interstate

The Interstatet Oil Pipe Line Company has completed 10½ miles of eight-inch discharge line from the Eucutta field, Wayne County, Miss., to its 20-car capacity rack that serves the Heidelberg field, Jasper County.

Crude runs from both fields will be routed via the Southern Railroad to Standard Oil Company of New Jersey's Avondale terminal at Baton Rouge. Heretofore, the Eucutta field runs have been dispatched by tank care to Mobile, Ala., tanker terminal of the Coastal Petroleum Company. This diversion of the Eucutta from Mobile to Baton Rouge involves a saving of 13 cents per barrel in rail tariff.

20-Inch Missouri Crude Line Is Completed for Stanolind

Construction of a 20-inch crude line between Stanolind Pipe Line Company's Freeman and LaPlate stations in Missouri has been announced. The company also will lay a 14 and 18-inch line between its Manhattan Station and Little Calumet Junction, Illinois.

Contracts have been awarded Oklahoma Contracting Company, Dallas; Sheehan Pipe Line Construction Company, Tulsa; and Bechtel Brothers McCone Company, San Francisco.

An intermediate pumping station will also be built on the 12-inch line between LaPlate Station and Wood River, Illinois.

Stanolind Completes 19-Mile West Texas Natural Gas Line

Stanolind Oil & Gas Company has completed a 19-mile, six-inch natural gas transmission line from its repressuring plant in the Cedar Lake field, Gaines County sector of West Texas, to the Honolulu-Homann one-well gas area six miles northeast of Seminole. Five miles of two-inch field distribution system is included in the project.

Stanolind built a pilot plant last year in the Cedar Lake field, compressing low-pressure casinghead gas to 1500 pounds for an experimental repressuring test. The results were satisfactory.

West Texas Gas Increases Capacity of 15-Inch Carrier

West Texas Gas Company, Lubbock, is increasing capacity of its 15-inch trunk line that delivers Texas Panhandle gas to the central portion of the West Texas district 10 million cubic feet to 50 million cubic feet daily through the installation of an 11-mile, ten-inch loop below Plainview in Hale County. The company is also adding a 400 horsepower compressor unit at its McSpadden station, Randall County. FPC recently authorized these new facilities.

Mid-Continent Expands System To Handle West Moore Pool Gas

Mid-Continent Petroleum Corporation is extending its gathering system to handle natural gas from the West Moore pool in Cleveland County, Oklahoma, and has started construction of a natural gas booster station on its Mollman lease in the South Moore pool. The project also includes construction at an early date of a gasoline extraction plant to process gas produced from wells in the area. Two 2400-horsepower compressors will be installed. The company is presently delivering about 18 million cubic feet of gas daily to the Oklahoma Natural Gas Company line near Moore.

British American Acquires Pipe Line Company's Stock

All the outstanding stock of the Montreal Pipe Line Company, Ltd., which owns and operates a pipe line from the international boundary near North Troy, Vermont, to Montreal East, has been acquired by British American Oil Company, Ltd., Imperial Oil, Ltd., McColl-Frontenac Oil Company, Ltd., and Shell Oil Company.

In addition to this the four companies, through a newly-formed subsidiary, Portland Pipe Line Corporation, have acquired all the assets of Portland Pipe Line Company, which owns and operates a pipe line running from Portland, Maine, to the international boundary, where it connects with the line owned by Montreal Pipe Line Company. The two lines thus provide a continuous system from Portland to Montreal.

Imperial will have 40 percent interest in both these companies and the other firms will have 20 percent each.

The lines, totalling about 235 miles, which were acquired from the Standard Oil Company (New Jersey) subsidiaries, were built during the war to save tankers and have a capacity of about 60,000 barrels daily and permit the continuous supply of crude oil to Montreal refineries on a year-round basis. The lines will continue to be operated as a common carrier system by the same personnel as heretofore.

Bruce Clardy Named Head of Stanolind Pipe Line Company

Bruce C. Clardy, independent Oil man of Houston, has been elected president and director of Stanolind Pipe Line Company to succeed Frank O. Prior, who has retired as president of the company but remains as chairman of the board. Clardy served as assistant director of supply for PAW in Washington during 1943 and 1944. He was in charge of all pipe line operations relating to the war emergency pipe line systems, the Big Inch and the Little Inch lines, and he directed crude oil allocations to refineries.

Bruce C. Clardy

Clardy was born at Alvord, Texas, in 1897, attended the University of Texas, and was in the Marines during World War I. He started as a roustabout for Jackson Company of San Antonio and rose to the position of superintendent. In 1926 he became chief department supervisor of the Oil and Gas Division of the Texas Railroad Commission, and in 1927 was made proration umpire for the Yates field of Texas.

Clardy went with Shell Pipe Line Company as a district gauger and pipe line foreman in the Yates pool in 1928, and in 1929 was transferred to the Dallas office as manager of the Crude Oil Department. The Dallas office was moved to Houston in 1932, and Clardy remained with Shell until 1936 when he resigned to form the firm of Heyser, Heard and Clardy, Inc.

After leaving PAW early in 1945, Clardy returned to Houston and engaged in drilling and producing operations. He has taken over his duties with Stanolind and will reside in Tulsa.

7½-Mile, 8-Inch West Texas Loop Authorized by Magnolia

Magnolia Pipe Line Company has authorized the immediate construction of a 7½-mile, eight-inch loop on its lines between the Fullerton field, Andrews County sector of West Texas, to Andrews Station on its Slaughter field-Midland trunk line. This unit will fill out an eight-inch loop installed late last year, and when completed the company will have 4½, 6 and 8-inch parallel lines between the two points, with a capacity of 42,000 barrels daily.

Socony-Vacuum to Complete Pennsylvania Carrier Soon

Socony-Vacuum Oil Company expects to complete its new products line to Western Pennsylvania this spring. The line is to be a combination of 12-inch, 10-inch and 8-inch, originating at the company's Paulsboro, N. J., refinery, and serving Pittsburgh, Lancaster, and other cities in the western part of Pennsylvania as well as towns along the route. It will be 375 miles long with spurs to serve the communities along the way.

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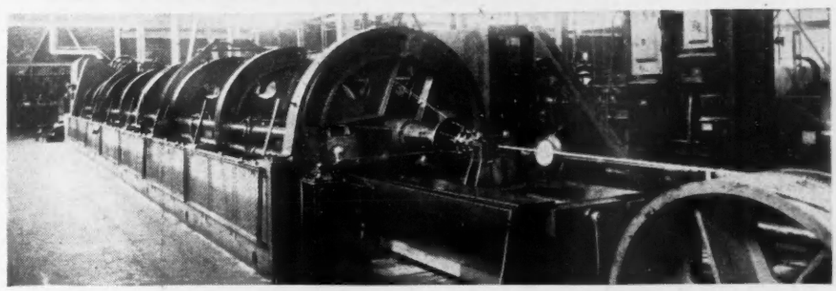
THROUGH PROCESSING THE WIRE—

TO FABRICATING THE WIRE ROPE—



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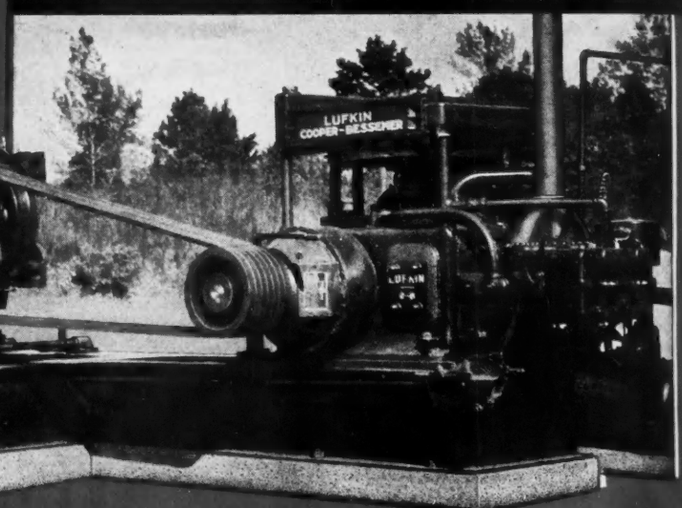

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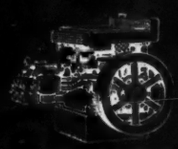

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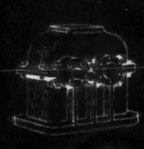

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Runs to Stills Hit New High for Year; Crude, Fuel Oil Output Drop Slightly

An increase in crude runs to stills during the week ended April 20 brought runs to a new weekly high for the year, and resulted in considerable increases in gasoline and residual fuel oil outputs. Crude oil production dropped slightly from the previous week, as did production of distillate fuel oil.

Heavy market demands for gasoline during the week resulted in more than 1½ million barrels being withdrawn from stocks, while light and heavy fuel oil stocks continued to accumulate. These trends were revealed in the latest weekly report of The American Petroleum Institute.

Crude production in the United States averaged 4,686,000 barrels per day during the week, a decrease of 5000 barrels daily from the previous week, and 112,000 per day less than the average production during the comparable week of last year.

Crude runs to refinery stills averaged 4,789,000 barrels daily, topping the year's previous high by 10,000 barrels per day. These runs represent an increase of 153,000 barrels daily over the previous week, and 74,000 barrels, or 1.6 percent, over the corresponding week a year ago.

Refinable crude stocks were placed at 221,260,000 barrels on April 13 by the U. S. Bureau of Mines, showing an increase of 46,000 barrels during the preceding 7 days, and representing an increase of 236,000 barrels over the amount on hand April 14, 1945.

Gasoline production, including natural blends at the refinery, amounted to 14,029,000 barrels for the week, 678,000 barrels over the previous week's output, but 1,071,000 short of the output of the same week of 1945. Gasoline stocks were reduced 1,522,000 barrels during the 7-day period and ended the week at 101,059,000 barrels, 7,818,000 barrels, or 8.4 percent, more than was held one year ago.

Distillate fuel oil production amounted to 5,211,000 barrels for the week, a drop of 54,000 barrels from the preceding week, but 578,000 barrels, or 12.5 percent, over last year's figure. Distillate stocks were increased 237,000 barrels during the week, and now stand at 30,284,000 barrels, which is 1,708,000 barrels, or 6.0 percent, more than stocks were a year ago.

Residual fuel oil output increased 622,000 barrels over last week and amounted to 9,230,000 barrels, which is 180,000 barrels more than was produced in the corresponding week a year ago. Residual stocks were upped 262,000 barrels during the week and are now placed at 38,124,000 barrels, which is 5.6 percent, or 2,252,000 barrels, more than last year's inventory.

Jenkins Sells Two Leases in East Texas Discovery Sector

Jenkins Oil Corporation and associates have sold two leases in the discovery sector of the East Texas field for $1,850,000 cash, or $50,000 per well. Stanolind Oil & Gas Company acquired the 49 percent interest owned by W. B. Hamilton, Wichita Falls, and Continental Supply Company, while A. F. Schubert, Dallas, and others purchased the Jenkins Oil Corporation's 51 percent interest in a separate deal with the individual stockholders of the latter. The properties involve the Jobe 109 acre lease with 28 pumpers and the Camp 34 acres with nine pumpers, both in the Juan Ximines Survey, Rusk County. All wells were drilled between 1931 and 1935, and have a marginal well allowable of 20 barrels daily. Water has not reached this sector of the field.

Trunk Line from Mississippi Fields Projected by Sohio

Sohio Petroleum Company is reported planning a crude trunk line from the Pickens and Tinsley fields, first important oil discoveries in Mississippi, to a barge terminal on the Mississippi at Mayersville. The company proposed a similar project during the war, but pipe and equipment was not available. The project would involve 24 miles of line in linking the Pickens field, which is currently averaging about 5050 barrels daily, to the Tinsley field, then 40 miles of discharge line to the river terminal. The Tinsley field is averaging 22,750 barrels daily.

Trends of Operations and Changes in Stocks

Figures on crude stocks are from Bureau of Mines weekly reports; all others from American Petroleum Institute weekly reports, which are estimates on Bureau of Mines basis.

(All figures in thousands of barrels—add 000)

HIGHS AND LOWS OF RECENT YEARS

ITEM	Crude Oil Prod. Barrels Daily	Crude Oil Prod. Week Ended	Runs to Stills Barrels Daily	Runs to Stills Week Ended	Crude Stocks Barrels	Crude Stocks Week Ended	Gasoline Stocks Barrels	Gasoline Stocks Week Ended	Gasoil and Distillate Stocks Barrels	Gasoil and Distillate Stocks Week Ended	Residual Fuel Oil Stocks Barrels	Residual Fuel Oil Stocks Week Ended
Highs:												
1941	4,337	11-22	4,120	10-18	266,187	3-29	99,727	3-29	[1]54,983	11-15	102,448	1- 4
1942	4,337	2- 7	3,961	1- 3	263,208	3-28	[1]109,281	3-14	47,561	11-14	95,857	1- 8
1943	4,436	11-13	4,331	12- 4	245,752	5-29	94,159	3-20	47,187	11-27	72,881	1- 2
1944	4,762	9-30	4,798	12-30	240,992	1- 1	89,162	4- 1	48,162	10-28	64,744	10- 7
1945	[1]4,944	7-14	[1]5,140	8-18	227,554	10-13	99,012	3-24	45,341	11-17	56,074	1- 6
1946	4,726	3- 2	4,789	4-20	229,430	3- 2	105,233	2-16	35,199	1- 5	42,371	1- 5
Lows:												
1939	[2]1,601	8-26	3,125	2-18	[2]229,127	10-12	71,152	10- 7	20,722	4-15	105,397	4- 3
1941	3,364	1-11	3,490	1-18	240,399	11-15	79,923	10- 4	28,382	4-12	90,914	7-13
1942	3,297	7- 4	3,393	5-23	231,896	12-12	75,934	12- 5	29,240	4-25	72,962	12-26
1943	3,821	1- 9	3,579	3-18	232,191	1- 9	68,182	10-16	30,732	4- 3	57,596	12-25
1944	4,357	1- 1	4,228	2-12	220,258	9- 9	76,302	1- 1	30,232	4-19	49,737	3-18
1945	3,621	10- 6	3,409	10- 6	[4]211,813	8-25	70,791	10-13	26,483	3-17	38,548	5-26
1946	4,403	3- 9	4,498	1-12	218,193	1- 5	98,494	1- 5	25,131	3- 9	37,289	4- 6

TRENDS OF 1945 AND 1946

Trends in Week Ended	Crude Oil Production Daily	Crude Oil Runs to Stills Daily	Crude Oil Stocks Week End	Gasoline Production Weekly	Gasoline Stocks Week End	Gasoil and Distillate Production Weekly	Gasoil and Distillate Stocks Week End	Residual Fuel Production Weekly	Residual Fuel Stocks Week End
1945:									
January 27	4,727	4,756	221,310	14,957	88,223	4,843	33,561	9,252	51,119
February 24	4,777	4,803	219,351	15,500	95,972	4,958	28,753	9,084	46,713
March 31	4,781	4,677	223,782	14,644	98,758	4,548	26,889	9,184	41,745
April 28	4,805	4,780	223,474	14,633	94,068	4,636	28,273	9,379	39,813
May 26	4,887	4,950	222,831	15,194	89,121	4,667	29,184	9,670	38,548
June 30	4,903	4,999	220,781	15,546	86,472	4,910	32,213	9,077	40,488
July 28	4,930	4,996	218,507	16,106	86,008	4,598	36,071	9,586	42,283
August 25	4,982	4,931	[4]211,813	15,986	84,693	4,960	39,782	9,356	46,201
September 29	4,357	3,812	222,387	11,913	79,552	3,940	43,689	7,047	46,853
October 27	4,273	4,838	224,230	15,530	74,335	5,159	43,472	8,691	45,943
November 24	4,469	4,648	219,363	15,681	83,184	4,802	45,258	8,800	47,474
December 29	4,474	4,729	218,918	14,546	95,205	5,055	36,651	8,765	42,447
1946:									
January 5	4,548	4,651	218,193	14,488	98,494	5,293	35,199	8,867	42,371
January 26	4,626	4,553	220,544	13,622	101,737	5,720	29,498	8,411	39,722
February 23	4,714	4,595	226,699	13,175	104,709	5,728	25,398	7,913	39,290
March 30	4,425	4,684	224,994	13,896	104,715	5,357	28,240	8,738	37,746
April 6	4,446	4,523	221,214	13,718	104,226	5,060	29,253	8,401	37,289
April 13, 1946	**4,691**	**4,636**	**221,260**	**13,351**	**102,581**	**5,265**	**30,047**	**8,608**	**37,862**
April 20, 1946	4,686	4,789		14,029	101,159	5,211	30,284	9,230	38,124
April 21, 1945	4,798	4,715	[5]221,024	15,100	93,241	4,633	28,576	9,050	40,376
Change:									
In week	—5	+153	+46	+678	—1,522	—54	+237	+622	+262
In year	—112	+74	+236	—1,071	+7,818	+578	+1,708	+180	—2,252
In year	—2.3%	+1.6%	+0.1%	—7.1%	+8.4%	+12.5%	+6.0%	—2.0%	—5.6%

[1] All time peak. [2] Lowest between January, 1922 and July 1, 1944. [3] Lowest since October, 1922 due to shutdown of six Mid-Continent states. [4] Lowest since December, 1921. [5] Stocks, April 14, 1945.

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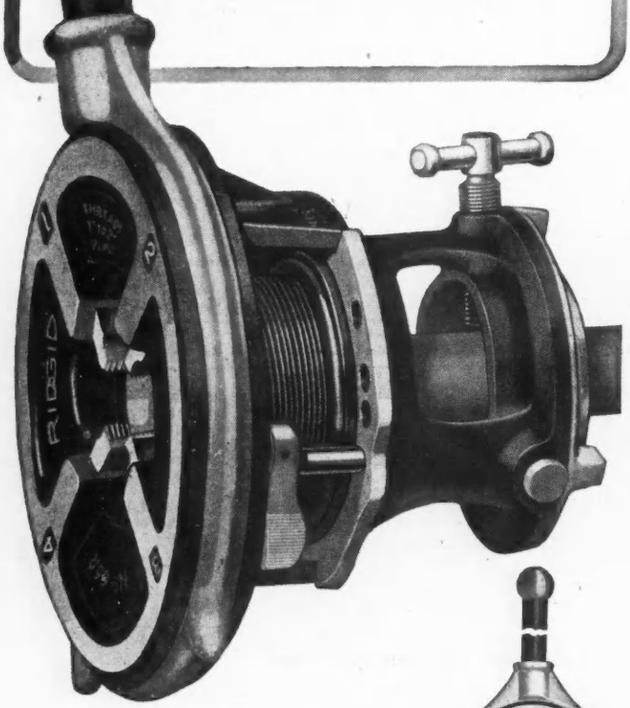

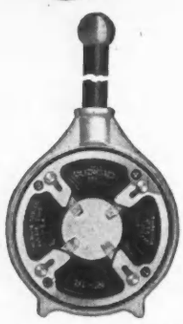

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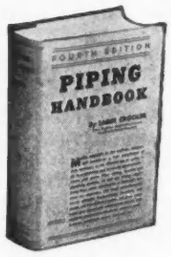

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☆ California

Casmalia Field Wildcat Makes New Deep Sand Discovery

Casmalia field, Santa Barbara County has new producing zone; Seaboard to drill Newhall area wildcat; interest in 237 zone at Wilmington spurs drilling; wildcatters active in Cymric area.

Santa Barbara County: A new deep sand discovery has been made in the Casmalia field, southwest of the Santa Maria Valley field, by Bell-Casmite Oil Company, subsidiary of Alphonzo E. Bell Corporation, Los Angeles. Operator's Arellanes 2, 13-9n-35w, has been completed pumping 320 barrels of 19.9 gravity oil, 7 percent cut. Well is believed to be producing from 2 sands in the Lospe formation of lower Miocene age. Total depth is 5950 feet, with plug at 4800 feet. Field reports credit the well with a 1000-barrel rate on production tests.

The Casmalia properties on which the deep sand discovery is located have passed through several hands in recent years. Originally operated by Tide Water Associated Oil Company, the properties were acquired in 1930 by O. C. Field. The Field operation was confined to the production of approximately 8-gravity crude from the Monterey (Upper Miocene) around 2000 feet. Fullerton Oil Company acquired the properties in December, 1944, disposing of them 1½ years later to the Bell interests. Alphonzo E. Bell has been in the oil business in California since 1919, when Union Oil Company drilled the discovery well at Santa Fe Springs in Los Angeles County on the Bell ranch. Location for a second well to the new Casmalia deep zone has been staked by Bell-Casmite Company on its Morganti lease 660 feet south of the discovery well.

Ventura County: Trans-Cal Gas and Oil Corporation's Trans-Cal 1, Ojai area, 12-4n-22w, had good oil and gas showings on the ditch. Drilling is continuing below 1240 fete.

Universal Consolidated Oil Company's Del Valle outpost, Aguirre 1 in 13-4n-18w, has been completed pumping 210 barrels of 21.6-gravity oil, 6 percent cut. Perforations are open by stages from 2988 feet to bottom at 3859 feet.

Los Angeles County: Interest in the East Los Angeles field centers on production tests in Chanslor-Canfield Midway Oil Company's outpost well, Bandini 1, 21-2s-12w. Well has been cleaned out to bottom. Richfield Oil Corporation's Keller 1 in 9-2s-12w was fishing for drill pipe after drilling to 7013 feet.

The Ohio Oil Company has been unable to recover electric log cable and drill pipe on bottom in its Gardena wildcat, Gardena Community Four 1, 23-3s-14w, and will side track past the fish. Total depth is 10,067 feet.

In the Torrance field, where interest has been shown recently in the possible development of Schist production, Standard Oil Company of California is rigging up to drill Joughin 4-1 in 24-4s-14w. Jergins Oil Company's Schist test in the west end of the field has completed a fishing job and is coring below 4430 feet. Wood-Callahan has foundations in for 3 projects in this field.

Seaboard Oil Company will drill a wildcat in the Newhall area. Mission Land 1-8 will be drilled in Bee Canyon in 25-3n-16w. Location is about ¼ mile southeast of Shell Oil Company's Mission 2-1, which had oil showings but was abandoned in April, 1942.

In the Wilmington field Hancock Oil Company has completed Harbor A-1 flowing 1780 barrels of 28.5-gravity oil through a 34/64-inch choke from the 237 zone above the Schist. General Petroleum Corporation's Harbor Community 29 is flowing 1610 barrels from the same zone. Considerable additional drilling to this zone is anticipated in the near future.

Kern County: Continued interest of prospect in the area around the Cymric field is evident from the announcement by Standard of location for Anderson 37-17W, wildcat test in 17-29s-21e, Salt Creek area. In Sect. 18, Richfield's M. & L. Fee 1, about a mile west of Independent Exploration Company's recent Carneros sand discovery in the Temblor area, is prospecting below 3300 feet. Top of gray Carneros sand was logged at 2545 feet in the Richfield well. Universal Consolidated Oil Company's Cymric outpost test, Sauerdough 7 in 23-29s-21e is drilling below 3480 feet in shale.

Sacramento County: Standard has completed Midland Fee 8 in the Rio Vista gas field flowing 10,575,000 cubic feet through a 5/8-inch choke, with 1337 pounds pressure on tubing and 1647 pounds on casing.

☆ Oklahoma

Bridwell Has Likely Shallow Pool Opener in Cotton County

Shallow oil pool likely for Cotton County; Corporation Commission to permit dual completion in West Moore pool; California's Love County wildcat testing; Wilcox starts Major County wildcat; Amerada gets good producer in West Velma pool.

Cotton County: Bridwell Oil Company has a likely shallow pool opener at Houghton 1, SE NW NW 23-3s-11w, 5 miles south of Walters. The wildcat, located on a 3500-acre block, encountered a sand with oil show at 1490 feet and drilled to 1498 feet and ran a drill-stem test. There was a recovery of 35 feet of free oil, 95 feet of oil-cut mud

Wells Completed in the United States in Week Ended April 27, 1946

Data preliminary and subject to revision. Revised and more complete data on all completions shown in monthly summary of drilling, published in second or third issue of each month. More detailed data on wildcats published in third or fourth issue of each month.

State or District	FIELD COMPLETIONS: New Wells *Oil	Gas	†Input	Dry	Total	Old Wells Deepened	WILDCAT COMPLETIONS *Oil	Gas	Dry	Total	ALL COMPLETIONS: This Week	Last Week	Cumulative This Year	Cumulative Last Year
Alabama									1	1	1		6	6
Arizona									1	1	1		1	
Arkansas	2				2						2	5	56	42
California	27	1		5	33				4	4	37	28	595	638
Colorado	4	1			5						5		34	11
Florida													6	4
Georgia													1	3
Illinois	21		1	6	28	1			5	5	34	44	617	522
Indiana	5				5						5	7	106	89
Iowa														1
Kansas	11	4		5	20	1			6	6	27	30	640	471
Kentucky	5				5		1		1	2	7	14	163	146
Louisiana	6			2	8				2	2	10	22	385	310
North Louisiana	6			2	8				2	2	10	10	200	96
South Louisiana												12	185	214
Michigan	5	3		6	14				5	5	19	15	219	236
Mississippi	3				3				1	1	4	2	73	120
Missouri													5	15
Montana	5			3	8				1	1	9	4	77	63
Nebraska														2
New Mexico	1				1	1					2	7	124	158
New York	15	1	10		26						26	27	332	311
Ohio	4	3			7						7	9	303	245
Oklahoma	28	1		8	37	2			7	7	46	33	816	730
Pennsylvania	27	6	15	4	52	3					55	48	909	928
Tennessee													2	1
Texas	93	5	2	27	127	3	5		21	26	156	153	2,554	2,315
E.Tex.Bor. Co.'s		1		1	2						2	1	50	27
Rest of E. Texas	11				11				2	2	13	14	173	64
North Texas	26		2	17	45	1			7	7	53	44	722	503
W. Central Tex.	2			4	6				1	1	7	11	191	153
West Texas	31				31	2	2		1	3	36	27	535	606
Tex. Panhandle	3			1	4						4	7	144	208
G. Coast, Upper	2	1		1	4		3		2	5	9	16	233	231
G. Coast, Lower	10	3		1	14				1	1	15	17	333	329
Southwest Texas	7			2	9				6	6	15	12	130	168
S. Central Tex.	1				1				1	1	2	4	43	26
West Virginia		9		1	10		1			1	11	14	234	241
Wyoming	1				1						1		43	57
Total U.S.	263	34	28	67	392	11	7		55	62	465	462	8,301	7,665

* Includes distillate wells. † Includes salt water disposal wells.

and 5 gallons of muddy water. Operator had casing set on top of the sand and will drill in with spudder. The rig has been moved to location for the Houghton 2, SW NW NW of 23.

Cleveland County: The Oklahoma Corporation Commission has approved application by Sinclair Prairie Oil Company to produce Theimer 2, SW SE SW 20-10n-3w, West Moore pool, from both the Bartlesville and Hunton lime zones. Located north of other producers in the field, the well flowed 233 barrels of oil through chokes from the Bartlesville zone at 7822-98 feet and 349 barrels of oil through tubing from the Hunton at 8030-50 feet.

Dewey County: Oklahoma Natural Gas Company et al's Oakwood Unit 1, NW NW NW 6-17n-14w, had a show from 7982-86 feet. A drill-stem test with packer set at 7951 feet was for about 4 minutes with recovery of 720 feet of oil and oil-cut mud. Olson Drilling Company has contract for the well, which is expected to go to 9500 feet.

Love County: The California Company got 3 barrels of oil on a 16-hour drill-stem test through perforations at 6570-97 feet during testing operations on Wright 1, C NE NW 13-8s-1w, wildcat south of Burneyville. Operators continue to test other shows encountered in the wildcat, which is on a 3000-acre lease spread just across the river from the Sivells Bend pool of Texas.

Major County: A new wildcat test for the Anadarko Basin area has commenced with the spudding of the Wilcox Oil Company et al's Coulter 1, SW SW NW 15-22n-9w, east of the town of Ringwood. Contract for the well is held by Gutowsky Brothers Drilling Company and calls for an 8000-foot depth or the Wilcox sand. Location is on a unitized block consisting of the south half of Sect. 9, and all of Sects. 15 and 16.

Stephens County: Amerada Petroleum Corporation's Thompson 1, SW SE NE 18-1s-5w, West Velma pool, flowed 110 barrels of 39-gravity oil through 1-inch choke in the first 4 hours of a flow test. For the following 12 hours the choke was reduced to 3/16-inch and the total for the 16 hours was 536 barrels of new oil plus 113 barrels of load oil. Gas-oil ratio is 340/1. The Thompson is the fourth producer in the pool and was drilled to 2766 feet. Casing was run to 2763 feet and perforations were made from 2630-50 feet.

☆ Kansas

Rush Wildcat to Go On Pump; Merten Pool Extended West

Rush County wildcat to be put on pump; Merten pool extended mile west; Edwards pool extension gets big oil producer; Swearer starts first of 5 southwestern Kansas wildcats; Beach Aircraft stakes 2 offsets to discovery in Sedgwick County.

Rush County: Darby & Bothwell's Wagner 1, NE NE NW 28-18s-16w, wildcat ½ mile south of the Albert pool, was to be put on pump after swabbing oil at the rate of 15 barrels in 5 hours. Pipe was set in the Reagan sand at 3623 feet and after drilling plug, 500 feet of oil came into the hole at 3631 feet. A swab test at this depth showed 12 barrels of oil in 4 hours. Operators then drilled to 3644 feet and here the well swabbed 15 barrels in 5 hours.

Barton County: The Merten pool has been extended a mile west by E. M. Hilton's Schultz 1, NE NE NE 8-19s-15w. The hole filled with oil after being drilled to 3584 feet in the basal sand, topped at 3575 feet.

Ellsworth County: Drawing a top potential of 3000 barrels of oil a day, Nelson Drilling Company et al's Janssen 1, NE SE NE 21-17s-8w, in the northwest extension of the Edwards pool, proved the best well completed in the extension. Same operators are preparing to complete the Williams 2, SW SW NW 22-17s-8w, in the same area and hole is being made at Janssen 2, SE NE NE of 21, the fourth well in the area. The Williams 1, which extended the pool in January, probably will be deepened in an effort to boost its potential. It carries a pump potential of 23 barrels of oil daily from the Arbuckle at 3254 feet. Operators expect to get better results from the softer pay zone after acidization.

Ford County: Ed M. Swearer, Wichita, has issued work order for Brown 1, SW SW SW 4-26s-23w, 8 miles northwest of Dodge City. The Brown 1 will be the first of five wildcats to be drilled in southwestern Kansas on the rim of Amarillo-Anadarko Basin. The Harbar Drilling Company has the contract for the Arbuckle lime. In addition to this block, Swearer has 2 blocks in Wichita County, and 1 each in Finney and Hodgeman counties.

Sedgwick County: Beech Aircraft Corporation has staked the northeast and southeast diagonal offsets to Hinkle 2, SE NE NE 1-27s-1e, wildcat northeast of Wichita which has opened a new area. The northeast offset is Allen 1, SW SW SW 31-26s-2e, and the southeast offset is Hinkle 3, NW SW NW 6-27s-2e. Drilling has started. Hinkle 2 is reported producing from the erosional zone found on top of the Mississippi and referred to as the detrital or Burgess sand. Burgess sand production is unusual in this part of the state as most of this production is found in Eastern Kansas.

Nomads' Guests

Foreign guests at the April meeting of the Los Angeles Chapter of Nomads included the following:

S. Y. Chow, National Resources Commission of China; A. J. Dodini, Bahrein Petroleum Company; E. M. Donovan, Burmah Oil Company, Ltd.; A. F. Driskill and J. W. Killingsworth, Iraq Petroleum Company, Haifa, Palestine; Milton H. Hobbs, Standard Vacuum Oil Company; Dewey C. Mong, Thomas Oil Well Cementing Company, Maturin, Venezuela; H. C. Tung, Kansu Petroleum Administration, Kansu, China.

Sabine Officers Named

W. M. Priddy, Tyler, was reelected president of the Sabine Royalty Corporation of Tyler at the stockholders' annual meeting in Tyler. Other officers, all reelected, were S. P. Burke, Tyler, and Dr. Paul Peck, San Antonio, vice presidents; and P. H. Lipstate, Tyler, secretary-treasurer. Robert G. Storey, Dallas attorney, and G. D. Broyles, Palestine, were elected new directors.

☆ New Mexico

Lea County Brunson Field Has Pre-Ellenburger Production

Pre-Ellenburger production uncovered in the Brunson field, Lea County; Drinkard field's first Ellenburger test has small show after acid treatment; Lea County has new wildcat project, replacing nearby structurally low failure.

Lea County: Magnolia Petroleum Company's Brunson-Argo 11, ¼ mile east of Ellenburger production in the Brunson sector of the Penrose-Skelly field, flowed 327 barrels of 42-gravity oil on 4¼-hour natural test through ¾-inch tubing choke from perforations at 7615-37 feet. This production is from weathered granite, which also produces below the Ellenburger zone in the Keystone field, West Texas. Brunson-Argo 11 is the highest of 6 deep wells in the area, and flowed oil through drill stem from the Ellenburger logged at 7475 to 7605 feet, while the underlying weathered granite beds were not tested prior to setting pipe. The well is bottomed in solid granite at 7444 feet. Rig has been skidded for a south offset. Lion Oil Company's Wylie 1, south end of the Drinkard multi-pay field and the first to encounter Ellenburger, developed a small show of oil and gas after initial treatment with acid from Ellenburger perforations at 8396-8420 feet. Second acid treatment was under way. Amerada Petroleum Corporation's Record 1, C NW SE 26-19s-35e, wildcat on a large block of leases in Lea County, was abandoned at 3499 feet, having entered the Yates at 3445 feet, or about 100 feet low for the area. Rig has been moved northwest to drill Hoper 1, C NW NE 27-19s-37e.

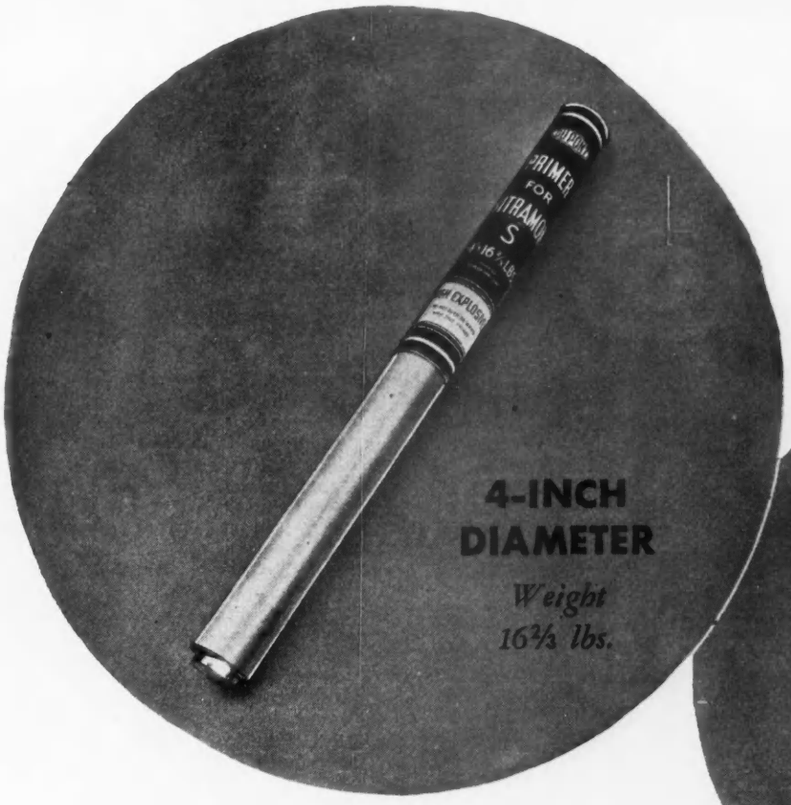
☆ West Texas

Official Gauge Completed on Ector Deep-Pay Discoveries

Official gauge completed on deep-pay discoveries in Ector County: Crockett County has discovery pumper; north outpost to TXL field low on Devonian and to continue to Ellenburger; Andrews County Ellenburger strike deepens.

Ector County: Phillips Petroleum Company et al's Eidson-Scharbauer Unit 1, ¾ mile west of the north end of the Penwell field, recorded natural potential of 1065 barrels of 43.5-gravity oil, with gas-oil ratio 573/1 through ½-inch choke from perforations at 8920-50 feet in Ellenburger, topped at 8888 feet. It was plugged back from water at 9020 feet. Tide Water Associated Oil Company, Standard Oil Company of Texas, Cities Service Oil Company and Skelly Oil Company participate in the unit, and a group of tests are obligated.

Stanolind Oil & Gas Company's Grisham-Hunter 1, recent new pay strike for the North Goldsmith field, flowed 445 barrels of 43-gravity oil, gas-oil ratio 1279/1, natural through ¼-inch choke from Devonian open hole at 7919-56 feet. The company's Williamson 1, 1¼ miles west by south of this producer and a failure in Ellenburger at 10,198-10,290 feet, was reacidizing open



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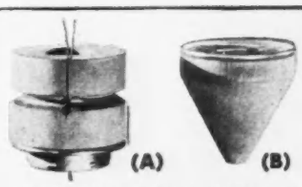

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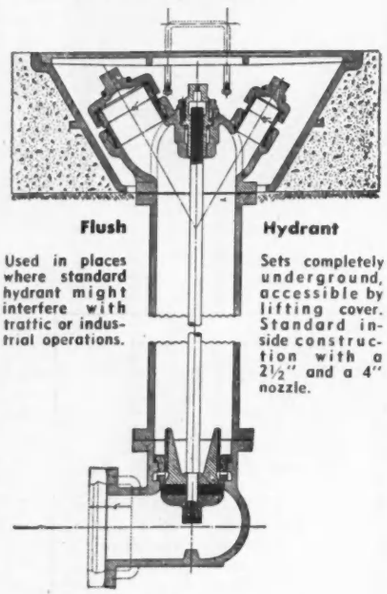

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hole at 8080-8500 feet in Devonian, topped at 8045 feet, or 63 feet low. The well yielded 44 barrels of oil on 24-hour swabbing test after initial treatment with 2000 gallons of acid.

The Texas Company's T. P. Fraser 1-F, C NW SW T&P Ry. 39, Block 45, T-1-N, 2¼ miles north of Ellenburger production in the TXL field, was making a drill-stem test at 8070 feet in Devonian, topped at 7920 feet, with elevation 3334 feet. This outpost correlates 32 feet low to a 9911-foot Ellenburger failure ¾ mile southwest. It is slated to the Ellenburger. Cities Service's Thomas 2-C, C NE SE T&P 6, T-1-S, northwest edge of the TXL field, scored the highest Ellenburger top in entering this zone at 9445 feet, with elevation of 3335 feet. It correlates 202 feet high to the south offset and 168 feet high to the southeast offset. A drill-stem test at 9510-80 feet accounted for a flow of 109 barrels of oil the last hour.

John W. Murchison et al's T.P. Land Trust-Texaco 1, C SE NW T&P Ry. 7, Block 45, T-2-S, 3½ miles south by west of the TXL field, was drilling Permian lime at 7765 feet, or 237 feet below the top of Devonian recorded by nearest producer. However, this wildcat is exploring a separate structure.

Andrews County: Shell Oil Company's Nelson-Humble 1, Ellenburger discovery that flowed 140 barrels of 42-gravity oil on 3½-hour test through 20/64-inch choke, was deepened from 10,453 feet to 10,488 feet, where test was pending. It is 108 feet in the Ellenburger. Shell plans a drilling program for the area, and chose to determine pay thickness before proceeding. Humble Oil & Refining Company's Gaines 1, 4½ miles north by west, was drilling lime at 6390 feet.

Martin Field: Sun Oil Company's Martin 2, which failed to make a commercial producer from Silurian open hole at 8046-8275 feet, plugged back to Basal Permian and swabbed 56 barrels of oil and 176 barrels of salt water on 17-hour test. This production is from perforations at 7570-7670 feet, and the zone was treated with 1000 gallons of mud acid. Recheck showed that pipe was not adequately cemented.

Mid-Continent Petroleum Corporation's Lotus 1, C NE SE PSL 17, Block A-48, and ¾ mile northwest of the South Fullerton-Devonian field, was logging good porosity in the Devonian at 8675 feet, and will drill through the zone before setting pipe.

Keystone field: Gulf Oil Corporation's Keystone 83-E, west offset to the most southerly producer in the Ellenburger area, flowed 1788 barrels of 42.7-gravity oil, with gas-oil ratio of 1348/1, on natural potential test through ½-inch choke from open hole at 9870-10,010 feet.

Yoakum County: Drilling & Exploration Company, Inc.'s Davis 1-D, C SW NW Sect. 728, Block D, and 5⅛ mile northwest of the Wasson field, recovered 1350 feet of salt water when tester was used at 10,723-10,774 feet in Devonian, topped at 10,699 feet. An incomplete drill-stem test at 10,731 feet yielded 7900 feet of rotary mud with some evidence of gas, but the second test apparently eliminated the Devonian as a source of production. Davis 1-D is 493 feet high on the Devonian when correlated with the Jones Ranch field discovery 6⅜ miles south by west.

John W. Murchison et al's Kirkpatrick-Sun 1, C NE NE Sect. 66, Block D, and 2 miles south of the Landon 2-well pool, Cochran County, entered the Yates at 2970 feet, or 36 feet low to the discovery, and was drilling at 4460 feet. A failure should materialize if this structural position is maintained in the San Andres.

Reeves County: Argo Oil Corporation's Roberts 1, which passed up fair to good shows of gas-distillate and oil in the Basal Permian, was drilling dry lime at 10,555 feet.

Kent County: Humble's Vick 1, Ellenburger discovery for the Polar prospect, flowed an average of 10¾ barrels of fluid hourly, averaging 6 percent basic sediment and 1.4 percent water, on 24-hour test through 14/64-inch choke after using 2000 gallons of acid through perforations at 7775-7810 feet. The company has moved rig ½ mile west to drill Moore 1, C NW NW H&GN 45, while American Liberty Oil Company's Connell-Young 1, C SE SE H&GN 56, Block 5, will seek a 1⅜-mile northwest extension.

Crockett County: Moore Exploration Company-Magnolia Petroleum Company and Stanolind's Halff-Bivins 1, SWc I&GN Ry. 65, Block 1, and 1¾ miles southwest of the Noelke shallow field, pumped 20 barrels of oil on 10-hour test after acidizing Holt perforations at 2692-2710 feet. This wildcat was plugged back from barren Ellenburger at 7222-7512 feet.

☆Central West Texas

Shackelford Ellenburger Test Fails to Respond to Acid

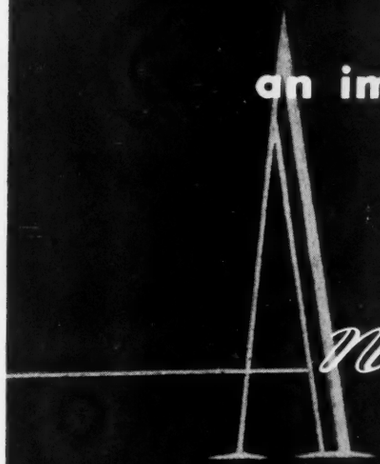
Second Ellenburger test in Sedgwick deep area, Shackelford County, fails to respond to acid; test underway at offset to Stephens County Ellenburger discovery; numerous majors returning to district to acquire blocks for deep explorations.

Shackelford County: R. N. Roark, L. F. Hooker and J. L. Douglas' Hickman 1-A, 1775 feet southwest of the Sedgwick field's Ellenburger discovery, failed to respond to initial treatment with 500 gallons of acid in open hole at 4227-34 feet. The Ellenburger was entered at 4227 feet, or 15 feet low, but showed promise of production on drill-stem test. Phillips Petroleum Company's Hickman-Nellen 1, northeast offset to its discovery, was drilling at 2500 feet.

Eltex, Ltd.'s Davis 1, SW SW SW T&P Ry. 52, Block 13, entered the Ellenburger at 4942 feet, elevation 1837 feet, and had reached water at 5071 feet. It is to be abandoned, making the fourth Ellenburger failure for the company in Shackelford County. One test was drilled to the Cambrian.

Stephens County: D. C. Norcross et al's Garlitz 1, C NE NE BAL 75 and a west offset to the Hatchett deep discovery, entered the Ellenburger at 4201 feet, or 20 feet low, and cemented pipe with the hole bottomed at 4231 feet. W. R. Skeen et al's Caldwell 1, ¾ mile southeast of the discovery, showed water after acidizing perforations at 4197-4201 feet in Ellenburger, topped at 4180 feet, or 8 feet high. This well showed for a small pumper from open hole at 4215-26 feet.

Callahan County: Woodley Petroleum



an important

Announcement

Otis Pressure Control, Inc., through an arrangement with the Sun Oil Company, has been granted exclusive license to provide a corrosion survey service for the internal inspection of well tubing by use of a new instrument to be called the

OTIS TUBING CALIPER

This instrument, known during its development as the Chaney-Barnes Tubing Caliper and the Sun Oil Company Tubing Caliper, was designed by Messrs. P. E. Chaney and W. E. Barnes, Petroleum Engineers, Sun Oil Company Production Department.

The OTIS TUBING CALIPER, already successfully used in high pressure wells, operates entirely on a mechanical, direct-contact principle. It detects and records both the extent and location of corrosion in tubing, and accurately measures the depth of pits.

Tubing surveyed by the caliper has been pulled, cut open, and visually inspected. OTIS TUBING CALIPER readings were proved correct.

Otis service crews, consisting of an engineer, and a wire line service specialist experienced in installing and maintaining sub-surface controls under pressure, will run the OTIS TUBING CALIPER to inspect tubing in areas where corrosion is either in evidence or suspected to be prevalent.

Further details will be furnished upon request.

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DISTRIBUTORS: OTIS PRESSURE CONTROL, INC., DALLAS, TEX.; OTIS EASTERN SERVICE, INC., BRADFORD, PA.; WESTERN PRESSURE CONTROL, LOS ANGELES, CALIF.

Company is acquiring additional acreage to support a second Ellenburger test to be drilled amidst shallow wells centering around BBB&C Ry. Sect. 129 and northwest of Admiral. The company's Flores 1, near C SE NW BBB&C Ry. was completed as a 15-barrel pumper in February, 1938, after acidizing dolomite at 4293-4333 feet in Ellenburger, topped at 4286 feet, with elevation of 1809 feet. This deep-pay strike was plugged September, 1943, but is now considered a significant lead for further explorations in the area.

Ellenburger Play: The recent completion of 2 Ellenburger flowing discoveries in Shackelford County and a pumper in Palo Pinto County served to attract numerous companies and operators to the district. Majors have been conducting geophysical surveys on the west side of the district in anticipation of the Ellenburger eventually becoming an important source of sweet crude reserves, and are now prepared to station full-time geologists and lease men in the area.

Humble Asks OPA to Revalue Crude from Texas Panhandle

Humble Oil & Refining Company has petitioned OPA to revalue Texas Panhandle crude oil on a par with Mid-Continent grade crude, or $1.35 for 40 gravity and above. Phillips Petroleum Company, largest purchaser of Texas Panhandle crude, has joined in the petition. As yet, the OPA has not allowed the increase.

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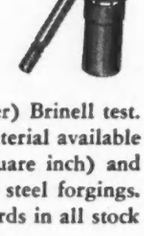

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☆ North Texas

Earlier Rating Exceeded by Cooke County Semi-Wildcat

Northwestern Cooke County semi-wildcat exceeds earlier rating; Sivells Bend field has southeast outpost failure; Foard County wildcat given nitro shot.

Cooke County: J. W. Modsett et al's Dennis 1, south line of Hugh Henderson Survey A-444, and 2000 feet north of 1400-foot production in the Bulcher area, pumped 150 barrels of 40-gravity oil initial. This production is from Strawn perforations at 1820-30 feet, and the outpost was plugged back from dry Ellenburger at 2105-11 feet. A. V. Grant and Pace Petroleum Company's Dennis 1, L. Ramey Survey A-1682, is being started as a south offset. Additional wells are planned on the strength of the showing of the new producer.

Magnolia Petroleum Company's Davis 1, J. C. Johnson Survey and 5200 feet southeast of the Sivells Bend field, was abandoned at 7190 feet. Base of the Rocky Point conglomerate was called at 5930 feet, with elevation of 802 feet. Sun Oil Company et al's Midkiff-Davis 1, Sol Gann Survey and a failure in the regular Strawn sands, was drilling at 8410 feet to explore the Ellenburger.

Foard County: Magnolia's Steele 1 wildcat 7 miles southeast of Crowell, was cleaning out after 5-quart nitro shot opposite casing at 5322-32 feet. A small amount of oil was recovered previously after acidizing perforations at 5322-32½ feet in Pennsylvania conglomerate. This wildcat tested water in Ellenburger at 5630-82 feet, then was plugged back to set pipe.

Knox County: L. S. Youngblood and R. L. Foree's Bates 1-A, wildcat near the east border of the county that showed promise of making a small pumper, was abandoned at 1620 feet. J. W. Hastings et al's Kuhler 1, 1300 feet south, was abandoned at 1708 feet. No further development is projected for the area.

☆ East Texas

Opelika Flank Test Proves Big Area for Oil Production

Second oil producer on north flank of the Opelika gas-distillate field confirms large area for oil production; Wood County wildcat proves dry in Woodbine; Winnsboro field has dual producer.

Henderson County: Lone Star Producing Company's Hearne-Magnolia 1, J. E. Clancey Survey and 3500 feet north by west of gas-distillate production in the Opelika field, headed 39-gravity pipe line oil when tester was used at 8855 feet in the Rodessa porous zone, topped at 8833 feet. It will be deepened to try for dual completion in the Pettit gas-distillate zone. This well is 2⅔ miles northeast of the company's Buckalew 1, which recently established the first oil production for the north flank of the expansive structure. It is now apparent that a large area may yield oil production. The second oil well correlates about 70 feet high to the original.

Lone Star and Magnolia Petroleum

Company's Faulk-Wofford 1, 3900 feet southwest of the Larue 1-well pool, was fishing for stuck drill-pipe at 7335 feet in Basal Glen Rose.

Wildcats: Daniel Oil Company, Inc.'s Hill 1, Juan N. Acosta Survey and 7 miles northeast of Fairfield, Freestone County, was drilling shale at 3680 feet, having entered the Pecan Chalk at 2575 feet. In Anderson County, Humble Oil & Refining Company's Freeman 1, Brushy Creek prospect, was drilling shale and lime at 12,385 feet without shows since passing up a trace of gas in the James.

Wood County: Amerada Petroleum Corporation's Brown 1, Ben Lee survey, Winnsboro field, flowed 113 barrels of 69-gravity distillate with gas-oil ratio of 6900/1, on 11-hour natural gauge through drill-stem from Bacon perforations at 7976-96 feet. The well also indicated flowing production from Gloyd perforations at 8260-85 feet before packer failed. Further test was underway.

W. F. Bridewell and Bobby Manziel's Coker 1, Wm. Clark Survey and a Paluxy wildcat for the Crow area, was drilling at 6610 feet in the Georgetown, topped near the 6300-foot level with elevation of 462 feet. The Woodbine, entered near the 5550-foot level, proved barren.

Smith County: Ed Pace and Gordon MacLean's Johnson 1, Andrew Kent Survey and ¾ mile southeast of the Mount Sylvan prospect awaiting completion in the 7200-foot Paluxy, was drilling Woodbine shale at 5440 feet.

Phillips Petroleum Company's Hughes 1, M. M. Long Survey, South Tyler field, was perforating for production test after landing 5½-inch casing at 10,046 feet, with hole bottomed at 10,060 feet.

Van Zandt County: Delta Drilling Company et al's Martin 1, 3½ miles southeast of the Tundra 1-well pool, was drilling lime at 8225 feet in the Rodessa series.

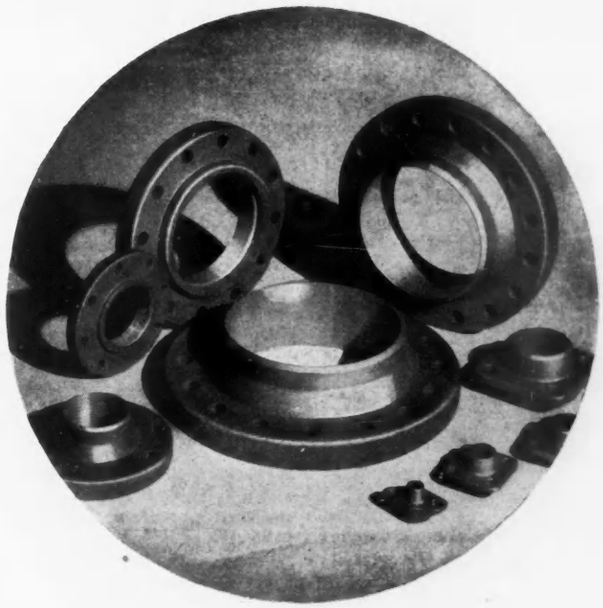
28 Geophysical Crews Are Active in East Texas Area

Twenty-eight geophysical crews are active in East Texas, mostly in an attempt to recheck previous work there.

Most active are The Pure Oil Company and Stanolind Oil & Gas Company, each employing three crews, while Magnolia Petroleum Company, Standard Oil Company of Texas, Shell Oil Company, J. S. Abercrombie of Houston, Humble Oil & Refining Company and Arkansas Fuel Oil Company have two crews each.

Those having one unit active include Amerada Petroleum Corporation, The Atlantic Refining Company, Sohio Petroleum Company, Gregg-Tex Gasoline, Gulf Refining Company, Continental Oil Company, Rogers Lacy, The Texas Company, Benedum-Trees and Lone Star Producing Company.

Despite the fact that 22 major companies had approximately 3,500,000 acres of land in the East Texas area under lease as of January 1, 1946, there has been no letup in this category during the early months of 1946. New blocks are being assembled and several major companies have been making a determined effort to add more leases to give compactness to their holdings.



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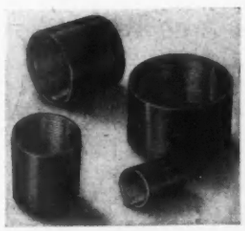

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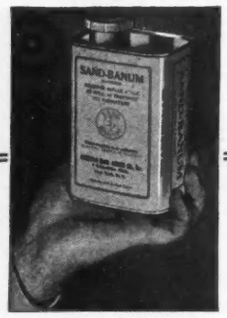

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☆ East Texas Border

Marion Discovery Is Gauged; Harrison Gets Deep Wildcat

Marion County strike gauged; deep wildcat staked in Harrison County; Panola County test completed as wet gasser.

Marion County: Magnolia Petroleum Company's S. L. Orr 1, R. B. Fowler Survey and 3½ miles southwest of Avinger, gauged 169 barrels of fluid, flowing and swabbing, of which 95 percent was 35.5-gravity oil and 5 percent basic sediment and water during 24-hour test through drill stem, using ½-inch bottom choke and 1-inch top choke. It is testing through 48 perforations at 7570-77 feet in the upper section of the Travis Peak after already having indicated gas-condensate production through perforations at 9025-35 feet, which was lower in the Travis Peak.

Harrison County: Bert Fields' J. M. Furrh 1, Davenport Survey and 5 miles southwest of Waskom townsite, on final gauge showed 66.2 barrels of distillate plus 2 million cubic feet of gas daily through ¼-inch tubing choke. Production is through perforations in Travis Peak, topped at 5950 feet.

Drilling is to get under way this week on Rogers Lacy's E. Key 1, A. Corcker Survey, Abstract 151, proposed deep wildcat 14½ miles south of Marshall.

Panola County: Delta Drilling Company's Ragley & Lewis 1, Rowe Survey, was completed from the Hill zone, upper pay horizon, producing 2 million cubic feet of wet gas and an unestimated amount of white condensate from the 5000-foot depth. The well is 10 miles northeast of Cathage townsite, being the Delta Company's first producer in the field.

Panhandle Group to Meet

The Panhandle Producers and Royalty Owners Association will hold its annual meeting May 16 in Amarillo, Texas.

☆ South Central Texas

Quintana Wildcat Abandoned; Waelder Area Test Plugs Back

Quintana abandons Gonzales County wildcat; Waelder area test plugs back for production test; Muil confirmation test runs production string; Jourdanton discovery given initial gauge.

Gonzales County: Quintana Petroleum Company's Anna Spahn 1, wildcat test which highlighted oil field developments in this county for several weeks, has been junked after the casing collapsed just below 8100 feet, which made it impossible to get a good seal-off of bottom-hole water intrusion. Tests were being conducted in the Glenrose formation at 8097-8100 feet, which zone was acidized. The last test made at this level recovered 2000 feet of oil-cut mud and 100 feet of salt water when the bottom plug failed to hold. With bottom of sand at 10,845 feet in the Smackover lime, this section was reported to have the best indications for oil production in the well. Operators will make another try in this area, it was reported.

Amerada Petroleum Corporation's Henderson et al Unit 1, promising wildcat 5 miles southeast of Waelder in the James Gibson Survey A-23, has set plug from 9500 to 9700 feet in the open hole after drilling to a total depth of 10,902 feet, and was waiting on cement. Operators run a 7⅝-inch pipe to 8771 feet and plan to make production tests below the casing in open hole.

Atascosa County: Quintana Petroleum Company's C. Muil 2, confirmation test in the Muil field discovery area, J. C. Mattison Survey 467, 4 miles northeast of McCoy and 1320 feet southwest of the C. Muil 1 gas-condensate discovery well, was running casing for completion. Details were not available as to depths and formations. The discovery produces from the Edwards lime at the 9000-foot level.

Humble Oil & Refining Company's Moursund 1, discovery well for the area 1 mile southwest of Jourdanton, northeast of the company's Schorsch 1 gas discovery, has been completed and given an initial pumping gauge of 37 barrels net oil per day and 3 percent wash water along with 49,750 cubic feet of gas. Gas-oil ratio was 1344/1. Total depth of well is 7385 feet in the Edwards lime, topped at 7362 feet, where 5½-inch casing has been set.

☆ Southwest Texas

New Oil Sand Discovered Between Boyle, Rincon

New oil pay sand discovered between Boyle and Rincon fields; Sun completes Webb County wildcat for deep gas discovery; Patel area wildcat shut in as new gas discovery in Jim Hogg County.

Starr County: George H. Echols' M. M. Garcia 2, about 4400 feet west of George Irving's M. M. Garcia 1-D, oil producer on the extreme north edge of the Boyle field, and about 2 miles southwest of the Rincon field, has been completed in perforations at 3392-3400 feet and was cleaning mud, gas and oil with no gauge. This new discovery may possibly be a part of the Boyle field where production comes from two levels at 3400 and at 3900 feet. Total depth of this well is 4106 feet and 5½-inch casing is set to 3474 feet. The M. M. Garcia 3 and 4 have been spotted. No. 3 is 1000 feet northwest of the Garcia 2 discovery well, and No. 4 is about 900 feet southwest of Garcia 2.

Webb County: Sun Oil Company's Isaac Hirsch et al 2, deep test in the Wilcox and located 26 miles northeast of Laredo, was completed for a new deep gas discovery and was gauged for a potential of 1,400,000 cubic feet of gas daily on a 3/16-inch choke. Tubing pressure was 1900 pounds. The well was perforated at 6905-15 feet in the top of a sandy section logged almost solid with gas shows down to about 7020 feet. Total depth of the well is 7530 feet and 5½-inch pipe is set at 7060 feet.

Jim Hogg County: F. A. Callery et al's J. V. Pena et al 1, wildcat in the "Patel" area in Survey 578, ½ mile southeast of the discovery well, was shut in as a small gas well. Total depth is 3200 feet with 5½-inch casing set to 2889 feet.

☆ Lower Texas Coast

Magnolia City Field Wildcat Makes Good Showing on Test

Magnolia City wildcat makes good oil test; Wilson area wildcat testing near 9000 feet; Gyp Hill wildcat waiting on casing; oil show reported in South Cabeza Creek outpost; major extension of field indicated at Albert West; Hinnant outpost makes gas on test.

Jim Wells County: Ralph E. Fair & Dan Auld's Reynolds & Richardson 1, wildcat 6500 feet northwest of Magnolia City field and 6 miles southeast of Alice, southeast corner of the J. Poitevent Survey 205, reported recovery of 225 feet of pipe line oil on a 15-minute drill-stem test conducted at 5403-10 feet where a working pressure of 31 pounds was developed. Operators took another core from this zone, the Frio, in preparation for another drill-stem test. This producing sand is at the same level as that of the discovery well, the Mary T. Shear 1, Magnolia City field, completed in 1939. However, most of the production in the field is from deeper zones, around 5600 and 5700 feet. A previous drill-stem test made in this wildcat at 4810-16 feet recovered 50 feet of oil-cut mud in 15 minutes with no pressure indicated.

Shell Oil Company's Hoogenhuyze 1, wildcat 2 miles east of the Wilson field in the southeast corner of the county, originally completed in perforations at 9174-84 feet, was squeezed and reperforated at 9191-9210 feet where the well flowed 2 million cubic feet of gas daily on a 5/32-inch choke and developed 3000 pounds tubing pressure. Operators are reported to have squeezed these perforations and reperforated at 9023-38 and 9060-69 feet and are running tubing in preparation for a production test.

Brooks County: Sun Oil Company's D. J. Sullivan 6, wildcat in the northeast corner of the county and 4½ miles southeast of Falfurrias, Gyp Hill area, has drilled to 9629 feet and was last reported waiting on 7-inch casing to use as a protection string against high-pressure sands that tried to blow out. An electrical log was run to 9550 feet in the scheduled 10,000-foot test.

Goliad County: Continental Oil Company's T. M. Reed 1, outpost 3800 feet northwest of Elmo Reed 1, South Cabeza Creek field, was reported to have recovered a 2000-foot water cushion and 2200 feet of oil-cut mud with an estimated 10 percent oil on a 20-minute drill-stem test at 8269-80 feet. An electrical log was run to 8320 feet and operators are drilling below 8407 feet. Only sandy shale with no show of oil was recovered in cores from below 8280 feet.

Live Oak County: Continental's Albelt West 1-B, second test in the Albert West area, J. Jamieson Survey 168, 4½ miles northwest of George West and 5615 feet southeast of the company's number 2-A discovery well, has indicated a major extension of the Albert West field as a result of oil recovery from the 6700-foot Wilcox discovery sand. The last drill-stem test was made at 6790-96 feet with no details available, but a similar test previously made at 6786-91 feet recovered the water cushion and 2940 feet of 31.5-gravity oil on a 20-minute test which developed only 3 pounds working pressure.

Houston Oil Company et al's Hinnant 1, outpost ¾ mile southwest of production at the Hinnant field, and a community operation on a Kirby Petroleum Company lease, was reported to have tested gas with some oil production from perforations at 6774-78 feet and is now shut in to install separator and tanks. On the test, the tubing developed 2525 pounds while the casing gauged 2600 pounds. A drill-stem test made previously recovered 75 feet of 49-gravity oil, no water in a 65-minute test from this zone.

The Atlantic Refining Company's Frank Morris 1, wildcat 19½ miles southwest of George West, I. M. Alexander Survey A-998, was reported circulating and building up mud weight after well knicked at 8297 feet from a sand in the deep Wilcox zone at 8265-75 feet.

☆ Upper Texas Coast

Skelly's Sugar Valley Field North Extension Completed

Potential given on Sugar Valley extension; new sand producer at Saratoga gauged; Olive confirmation test cleaning into pits; McCoy wildcat swabbing after acid treatment; Madison County wildcat running liner; Jackson Pasture test drills below 6600 feet.

Matagorda County: Skelly Oil Company's Gregg Lawrence 1, has been completed in a new sand to extend production of the Sugar Valley field 3000 feet northward on the western side of production. The potential flow gauged 168 barrels of 32-gravity pipe line oil

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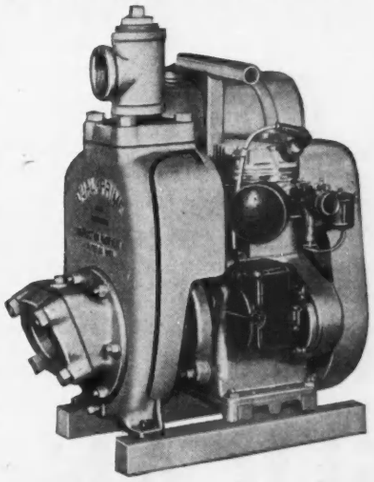

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daily through 3/16-inch choke from 7 perforations at 8993-95½ feet with 420 pounds pressure on tubing under flow. Gas-oil ratio was estimated at 616/1. Total depth is 10,000 feet and 7-inch casing is set to 9130 feet. The producing sand was picked from 8972-97 feet.

Hardin County: L. M. Josey et al's Caswell Trust 2, about 240 feet west of the No. 1 dry hole, BBB&C Survey, Abstract 311, has extended production on the east flank of the Saratoga field about 3000 feet with oil flowing from a new sand for the area. A potential of 128 barrels of 39.8-gravity pipe line oil was gauged from 48 perforations at 5854-66 feet using ⅛-inch choke. Casing pressure was 875 pounds and tubing pressure under flow gauged 870 pounds. Total depth is 5951 feet and 5½-inch pipe is set to bottom.

Pan American Production Company's Olive Sternenberg Lumber Company 2, confirmation test for the Olive discovery area, Sect. 6 of the J. Landis Survey, Abstract 382, was reported cleaning in pits with an unestimated flow of oil. Production is from perforations at 10,100-140 feet on a ¼-inch choke and developing 3000 pounds tubing pressure. The fluid is 75 percent oil and 25 percent muddy wash water, no salt water. Total depth is 11,474 feet with 5½-inch casing cemented at 10,184 feet.

Liberty County: The Ohio Oil Company's B. E. Quinn 2-A, wildcat a mile northeast of the McCoy field discovery in the Daniel Donahoe League, Abstract 24, was swabbing at the rate of 3 barrels of 33-gravity oil per hour after treating the producing formation with 500 gallons of acid. The well was perforated at 9128-34 feet where the well first swabbed 1 barrel hourly, but after acidizing, the well swabbed 3 barrels hourly, 94 percent oil and 6 percent sediment with a slight indication of brackish water.

General Crude Oil Company's John Vajdak 4, east side of the Esperson field, was completed for a flow of 135.17 barrels of 40.5-gravity oil daily through ⅛-inch choke from 210 perforations at 8060-95 feet. Tubing developed 925 pound pressure under flow and the casing gauged 1500 pounds.

Madison County: West Production Company & Noranda Oil Company's H. M. Boring 1, wildcat test in the Amy Boatright Survey 7½ miles southwest of Madisonville, was running 4000 feet of 5-inch liner inside the 7-inch pipe set at 9515 feet. Total depth is 12,554 feet and electrical logs indicate formation tops as follows: Wilcox 1581 feet, Navarro 6680, Pecan Gap 7373, Austin Chalk 7984, Eagleford 8326, Edwards lime 9613, Glenrose 10,103.

☆ South Louisiana

Mamou Confirmation Project Picks Up Several Good Sands

Mamou confirmation test picks up several good sands; Washington Parish wildcat continues to drill after making salt water tests.

Evangeline Parish: Magnolia Petroleum Company's L. F. Duos 1, confirmation test in the Mamou discovery area, 6-5s-1e, continues to drill below 11,572 feet. The well is reported to have picked up the discovery pay sands in the Wilcox in addition to sands encountered in the Cockfield and the Sparta which indicate favorable oil shows good enough to produce. This well is ¾ mile southwest of the Morein 1 discovery, and is scheduled for 12,000 feet. Spudded in January, the well has 9⅝-inch casing set at 8101 feet.

Magnolia's O. L. Gillory 1, northwest offset to the discovery well of the Mamou area, 6-5s-1e, on a 54-acre tract, was drilling at 11,421 feet in sandy shale. An electrical log was run to 10,250 feet with no results shown.

Washington Parish: Humble Oil & Refining Company's Gaylord Container Company 1-B, wildcat south of the Mississippi state line, 42-1s-14e, is drilling in shale and sandy shale below 9250 feet, with intensions of going to 11,500 feet. Two drill-stem tests have been conducted so far, with negative results on both. Tests in the 8100-foot and 5900-foot sands recovered only salt water.

Beauregard Parish: L. D. Cain Drilling Company's W. I. Cooley 1, wildcat in the Bear field area in the southeast corner of 20-9s-9w, was drilling in sandy shale below 5812 feet after setting 10¾-inch surface pipe at 1181 feet. The well is slated for a test in the Frio.

Magnolia's Logan et al 1, a 9000-foot venture in the Oretta field area, 32-5s-11w, is drilling in sandy shale below 7220 feet with nothing of interest shown to this depth.

Terrebonne Parish: Humble's Louisiana State 1 (formerly owned by Arkansas Fuel Company), located on State Lease 601 in twp. 20s-13e, has cemented 7-inch protection pipe at 12,017 feet after running electrical log to 10,206 feet with northing of interest reported. The well is drilling below 12,208 feet with a target of 12,500 feet.

St. Landry Parish: Sun Oil Company's Darby 1, south extension test in the Shuteston field, 6-8s-4e, drilled to 10,854 feet, took side wall cores, and plugged back to 7890 feet and has side tracked in a northwesterly direction in an effort to pick up the sands which are believed to be faulted out. The well was drilling below 9014 feet.

☆ North Louisiana

Mooringsport Test Completed As Distillate Producer

Lisbon field wildcat completed as small producer; distillate producer noted in Mooringsport area and small oil producer in Longwood area of Caddo Parish.

Caddo Parish: Union Producing Company'c Fly 1, SW NE of 16-19-16w, Mooringsport area, was completed as a distillate producer and shut in without official gauge being announced. This wildcat was plugged back to 5750 feet from 6028 feet, perforations made, and tested considerable distillate with tubing pressure 2175 pounds, and casing pressure 2150 pounds.

Union Producing Company's Noel Estate A-1, in 11-19-16w, Longwood area, flowed 31 barrels of oil in a 24-hour period, and was shut in after acidizing.

A. Paul Gilbert's Thompson 1, 15-22-16w, Pine Island field, was drilling in chalk at 2070 feet. It was expected to core the Blossom after coring the Naca-

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tosh at 1340 feet brought no recovery prospect. If Blossom gives no show indication, no test will be made and the Paluxy, which should be topped around 2700, will be sought.

Claiborne Parish: E. R. Brann's T. H. Lloyd 1, 10-20-5w, a Lisbon field wildcat, was completed, with production 100 barrels per day from 5315 to 5329 feet in the Pettit lime.

Richland Parish: R. T. Sellars Company's L. P. Ford 1, wildcat, in 12-16-7e, was completed with perforations at 2860-66 feet, total depth 3208 feet, making 290 barrels of oil through ¼-inch choke, gas-oil ratio 210/1, gravity 39.9.

☆ Arkansas

Production in Wesson Field Gets Southwest Extension

Wesson field production extended ¼ mile southwest; Nevada County wildcat completed as 100-barrel producer.

Columbia County: McAlester Fuel Oil Company's W. H. Rose 1, wildcat, 12-16-20, was near 6900 feet, and should reach contract depth of 7000 within a few days. It was last reported in the Smackover. Same operator's E. A. Threadgill Estate B-1, C NE SE 10-17-19, Village field, was nearing 7000 feet.

Skelly Oil Company's Myrtis Pipes Unit 1, E SWc, 26-19-20, Haynesville extension, was reported still testing. Last test showed a flow of 161 barrels of fluid per day, through pump, mostly water.

Ouachita County: R. R. Crow's P. C. Grayson C-1, NW SE NW 18-15-19, perforated casing at 3277-84 feet in upper Travis Peak, and pumped 75 barrels of oil daily, gravity 30. McAlester Fuel Oil Company's Wesson heirs A-1, SE NW SW 24-15-19, Wesson field, was completed from the Glen Rose sand at 2600 feet, extending production ¼ mile southwest. It was flowing with good pressure but not gauged. New projects by same operator are Allen 4-3 and C. M. Wesson A-3, both in Sect. 24. McAlester's R. W. Wesson B-2, NE SE SE 24-15-19, tested salt water with a slight show of oil at 2878-90 feet in the James lime. Further tests are being made. Hunt Oil Company's J. H. Dawson 1, a wildcat in 14-15-18 was reported drilling around 4000 feet. Foster & Green's Emma Campbell 1, in 10-15-19, stuck drill stem at 2305 feet and spent the week fishing, but is now ready to go back in.

Union County: J. E. Barry's Eke Murphy 1, C SE SW SW 8-16-15w, Old Smackover field, was completed as a pumper, gauging 15 barrels daily in the Blossom sand, perforations at 2610-14 feet, total depth 2753 feet.

Lafayette County: Barnsdall Oil Company's Colonel Moore 1, 34-17-24, east edge of McKamie field, was completed and turned into tanks but not officially gauged. It is reported to be a good gas distillate well, 44 gravity. Perforations were between 9298-9310 feet, at total depth 9312 feet.

Nevada County: Chas. F. Steele's H. L. Waters, wildcat, C E½ NW NE 20-14-21, ½ mile east of Willisville, after perforations at 1207-19 feet, was making 100 barrels of 16-gravity oil per day.

☆ Mississippi

Kings Field Southwest Offset Registers Encouraging Shows

Second test for new Kings field shows up well; new producing horizon indicated for Cranfield; important Wayne County test finally abandoned.

Warren County: Magnolia Petroleum Company's S. D. Finley 1, NWc 20-2n-14e, southwest offset of the discovery well in the newly-developed Kings field, has recovered encouraging shows in the 2000-foot zone. Cores taken at 2158-61 feet had shale streaked with sand and stained with oil, although a drill-stem test of the section recovered only mud. Subsequent cores of section between 2193-2393 feet recovered lime with shows of heavy oil. Driller is now running core tests below 2393 feet in the proximity of the Wilcox horizon.

Adams County: The California Company's Ella G. Lees 9, 45-7n-1w, Cranfield field, recorded shows of gas in a drill-stem test at 11,680-706 feet in the Paluxy horizon. Usual production for the field is the Wilcox zone in the vicinity of the 5800-foot level and the Marine Tuscaloosa and Massive sand zone at approximately 10,000 feet. Although only a mild show was recorded in the 11,000-foot test, it is important in that it occurred far below present productive levels. T. F. Hodges' James Malone 1, 73-7n-1w, Cranfield, was completed in the Wilcox horizon with an initial production rate of 312 barrels a day. Cali-

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Recent advertisements of the MIDWEST OIL REGISTER in oil journals has caused confusion among many in the industry, who, noting the similarity in names, believe it to be connected in some way with the PETROLEUM REGISTER.

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fornia's Ella G. Lees 14, 45-7n-1w, has also been completed in the Wilcox with production from perforations at 5812-18 feet. Well flowed 116 barrels of 40.8-gravity oil in initial test.

Franklin County: California's Homochitto Lumber Company 2, 29-7n-1e, on the eastern limits of Cranfield, appears headed for successful completion after a drill-stem test of the Lower Tuscaloosa zone at 10,302-305 feet developed a flow of 203 barrels of 38.2-gravity oil in a 15-hour period.

Jasper County: Gulf Refining Company's Sallie E. Dantzler 5, NWc NE NW 3-10n-10w, East Heidelberg field, is drilling below 4912 feet after cores from 4860-79 and 4889-96 feet showed sand of fair porosity with slight shows of oil.

Yazoo County: Southern Natural Gas Company's Gammill Investment Company 2, SE SW NE 6-9n-4w, 6000-foot test, was waiting on cement after running casing to 2076 feet. Plains Production Company's E. W. Milner 5, NEc NW SW 7-10n-2w, Tinsley field, is preparing to run further tests of the lower horizons after reaching 6175 feet. Drill-stem tests at 5389-5415 feet recovered 800 feet of oil and mud. Union Producing Company's Jennie Stevens 22, SWc 1-10n-3w, Tinsley, also has had good shows of oil in the Stevens and Lammons sand zone below 5200 feet and is preparing to test the section further. Cores from 5848 feet in the Tuscaloosa horizon recovered only sand with salt water.

Clarke County: Sun Oil Company's Long Bell Petroleum Company 1, NWc 7-2n-17e, wildcat west of the Langsdale field, is drilling below 1900 feet. Test will head for 5000-foot zone.

Wayne County: Humble Oil & Refining Company's Masonite B-1, SWc 21-9n-7w, among the most important tests made in recent months, has been abandoned as a duster at a total depth of 8500 feet.

Alabama

Glen D. Rose's First National Bank of Birmingham 2, NW SE 30-12s-7w, Walker County, only active operation in the state, is drilling below 1800 feet after topping Tuscumbia zone at 1733 feet. No shows have been reported.

Mobile County: Mikton Oil Company's Mike Vergos 1, C SE NW 21-3s-2w, among the deepest tests to be drilled in the state in recent months, has been abandoned at 8521 feet in the Comanchean horizon. No shows were noted at any point.

Florida

The Ohio Oil Company's Hernasco Corporation 1, NWc 19-23s-18e, Hernando County, wildcat, is drilling below 6362 feet with no shows reported below the 6000-foot zone.

Franklin County: The Pure Oil Company's H. C. Lister 1, NWc 17-7s-7w, wildcat, is drilling below 4937 feet. Section between 4835-55 feet was cored to reveal sand and shale with no shows indicated.

Monroe County: Gulf Refining Company's State Well 1, SWc 2-67s-29e, wildcat, is still held up by repairs at a total depth of 5530 feet. O. D. Robinson's State 1, NEc NW 29-59s-40e, deep test, is working below 11,283 feet. Cores of 2 sections at 10,734-45 feet and 10,745-788 feet recovered stringers of lime with very slight oil shows. Anhydrite was indicated at 11,100 feet.

Levy County: Sun Oil Company's J. P. Goethe 1, SWc 31-14s-17e, first test for this area has run into trouble with water input after reaching 1089 feet.

Osceola County: Humble Oil & Refining Company's N. Ray Carroll 1, SE SE 10-27s-34e, wildcat, is bottomed temporarily at 1955 feet for conditioning job. Cores taken of the 1900-foot zone recovered dolomite with fair porosity.

Collier County: Humble's Gulf Coast Realty 6, SW NE 19-48s-30e, Sunniland field, is running 7-inch casing for test after cores taken at 11,572-578 feet recovered porous lime with shows of oil. Well is at a total depth of 11,578 feet.

☆ Michigan

Deep River Field Extension Prospect Flows from Dundee

Arenac County strike opens way for extension of Deep River field; important Clare County prospect coring in Detroit River series; Oscoda County deep test expected to make commercial well.

Arenac County: Although only 660 feet east of a producer, Ervin Major's Bilarski 1, NW SW NW 24-19n-4e, is regarded as an important extension prospect for the Deep River field, flowing 200 barrels per hour natural from the top Dundee dolomite at 2810 feet. It was the first producer in Sect. 24 after 2 previous failures and it appears to open the way for continued southeast extension of the pool, now five miles long but not more than ½ mile wide at any point.

Clare County: The Pure Oil Company's Freer 1, N½ NW SW 18-17n-6w, deep wildcat, was coring at 5168 feet and probably will be cored below 5200 feet. Cores from below 5037 feet have carried 30 feet of gas-saturated sand formation and over 70 feet of gas and distillate-bearing lime formation. At 5032-37 feet, the last point where an actual production test was made, the well showed between 9 and 10 million cubic feet of gas and 90 to 100 barrels of distillate production. Section under test is the Detroit River series of Devonian age. The test is regarded as the best deep prospect in Michigan in months.

Oscoda County: The Ohio Oil Company and Sohio Petroleum Company's Mio Unit 1, SE NW SW 30-25n-3e, first deep test on a unitized operation program in a block of several thousand acres, is expected to make a commercial oil well in the Richfield section of the Detroit River. Plugged back from 5129 to 4255 feet and acidized twice between 4170 and 4255 feet, the well now is reported recovering between 10 and 50 barrels of oil by flow and swab. It will be reacidized. Meanwhile, 2 more locations have been surveyed.

Saginaw County: Rowmor Corporation's Bork 1, NW SE NW 3-11n-2e, Fremont Township wildcat 12 miles southeast of Porter field, pumped between 25 and 45 barrels of oil per day on tests following 2 acid treatments to a Dundee lime pay at 3127-29 feet. The test originally was drilled to 3155 feet and a water zone and then plugged back.

☆ Illinois Basin

Coles County, Illinois, Has Apparent Rosiclare Strike

Coles County, Illinois, wildcat is apparent Rosiclare producer; test in Mattoon area is disappointment after shots; production test set for White County prospect; new area opened in Posey County, Indiana.

Coles County: Vincent Nolan's Coombers Estate 1, NE NE SW 23-14n-7e, more than 8 miles north of production in the Mattoon pool, apparently is a producer in the Rosiclare formation. Preliminary tests of the well indicate it will produce 30 to 40 barrels of oil daily. Operator is still testing. The well is 2 miles north of a small producer completed by The Carter Oil Company and later abandoned in the Aux Vases sand.

B. A. Baker's Miller 1, SE NE NW 6-11n-8e, 2 miles east of production in the south end of the Mattoon pool, was a disappointment after heavy shooting. The well appeared a small producer in Cypress sand at 1890-1900 feet, but showed too much water and too little oil. After a 20-quart shot the well tested 1½ barrels of oil per hour. But after bigger shots, the oil content dwindled and the water encroached.

Clinton County: Doran and Conrey are drilling below 2750 feet in Devonian lime at Norman Community 1, NE NE SW 17-3n-1w, a closely watched wildcat near Boulder.

White County: Sinclair Wyoming Oil Company's Aldridge 1, NW SE SE 1-6s-9e, is drilling plug for production test of Tar Springs sand which may give the area a new pay horizon. Pay at 2354-66 feet, showed 120 feet of clean oil and 60 feet of oil-cut mud during a drill-stem test.

Indiana

Ledbetter and Heath's Utley 1, SE NE SW 30-5s-13w, Posey County, 2½ miles northeast of the South New Harmony pool, swabbed 150 barrels of oil in 12 hours from McClosky lime at 3005-10-ft, to open a new area. The well was treated with 3000 gallons of acid. Testing continues.

Fox and Fox are certain of a new pay area at Audrey 1, SE SW NW 10-4s-14w. The well swabbed 200 barrels of oil in 20 hours from Tar Springs sand at 2225-50 feet after a 40-quart shot. It is 1½ miles east of production in the New Harmony pool of Illinois, and separated from the latter by dry holes.

☆ Canada

Alberta Syncline Wildcat Has Saturation from Dalhousie

Interest of the Canadian oil industry has centered on Royalite Oil Company's De Winton 1, lsd 14 16-21-1w5, Alberta Syncline wildcat 15 miles south of Calgary and 13 miles east of the major Foothills Oilfield, Turner Valley.

The test has encountered good porosity and oil saturation in cores from the Dalhousie sand at 8170-85 feet and in the underlying Basal Fernie down to current depth of 8220 feet. A 48-minute drill-stem test of the Dalhousie sand section before carrying into the Fernie gave a 280-foot rise of light crude oil and drilling mud, no water.

The promising showings are in the section immediately overlying the principal objective, the Madison Limestone, which is expected at about 8235 feet.

The well is testing a seismograph-indicated terrace on the east limb of the Alberta Syncline, a hitherto scarcely touched region flanking the Foothills Belt on the east. Large blocks of leases and reservations are held over a length of 350 miles (from the Montana Boundary), with several majors and independents in the play, and results at De Winton will play an important part in the future development of the region.

S.A.C. Oils No. 4, NE lsd 16 3-49-28w3, Saskatchewan side of the Alberta-Saskatchewan oil field at Lloydminster, and first gusher in that field, flowed about 3000 barrels of 14.7-gravity crude, 1 percent cut, in 48 hours, then the well was shut in. The well was started on pump April 18, and netted 434 barrels of oil in four days. Because of the loose sand condition in this field, and danger of coning in water from lower levels, the well is expected to be further restricted to about 75 barrels daily.

Texas Lands Offered

Leases of Texas state lands have been offered for sale and bids are due in Austin on June 4. Included are 12,500 acres in Matagorda Bay, Matagorda County, and 2500 acres of submerged land in Kleberg County. There is an offering of the Brazos River bed between Milam and Robertson counties.

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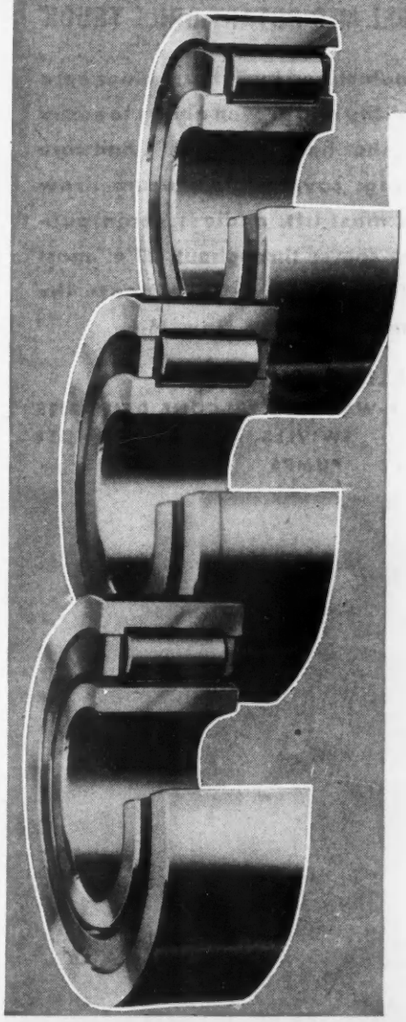

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EXPLORATORY COMPLETIONS

ALABAMA WILDCAT

Mobile County—Failure: Mikton Oil's Mike Vergos 1, c se nw 21-3s-2w, chalk 5434 ft, Tuscaloosa 6972, Massive sd 8147, abnd 8521.

ARIZONA WILDCAT

Maricopa County—Junked: John J. Robertson et al's Whitman 1, c ne ne 33-5n-3w, jkd and abnd in lime 4300.

CALIFORNIA WILDCATS

Kern County—Failures: Bender Oil's Kelly 1, 20-28s-27e, Kern Front area, abnd 3677.

Bender Oil's Seaboard 1, 22-28s-28e, Kern River area, Pyramid Hills 2968, Vedder 3000, abnd 3068.

Continental Oil's Reay 1, 28-29s-30e, Cottonwood Creek area, abnd 1438.

Ventura County—Failure: Bennett Exploration's Triunfo 2, 24-1n-19w, Triunfo area, abnd 2050.

ILLINOIS WILDCATS

Coles County—Failure: Jarry M. Miller's Berkley 1, se sw se 12-11n-10e, abnd 502.

Hamilton County—Failure: Nat'l Assoc. Pet. Co.'s Wilson 1, ne ne se 26-5s-7e, abnd 3552.

Jasper County—Failure: J. W. Rudy's Nat'l Bank 1, s½ sw ne 30-7n-11e, abnd 2642.

Shelby County—Failure: Big Four O & G's Horn 1, sw sw sw 19-12n-5e, abnd 2350.

Wayne County—Failure: Ben Taylor et al's Nichols 1, sw nw nw 18-2s-6e, abnd 3320.

KANSAS WILDCATS

Butler County—Failure: J. P. Gaty's Coiner 1, nw nw sw 19-27s-3e, abnd 2890.

Cowley County—Failure: Earl Wakefield et al's Hann 1, nw nw nw 22-31s-3e, abnd 3257.

Ellis County—Failure: Aylward et al's Denning 1, se se nw 36-12s-17w, abnd 3751.

Ellsworth County—Failure: Gough Davis et al's Hoch 1, se sw nw 19-15s-10w, Arb 3323, abnd 3350.

Kingman County—Failure: Deep Rock's Whitmer 1, nw nw se 10-30s-9w, abnd 4926.

Meade County—Failure: Stanolind's H. G. Adams 1, swc 7-35s-29w, abnd 6657.

KENTUCKY WILDCATS

Butler County—Failure: McGinley Bros.' Whalen 1, 12-H-36, abnd 1525.

Henderson County—Oil Discovery: Sun's Sutton 1-G, 22-O-22, pumped 15 bbls oil day, Penn sd 1069-93, td 1093.

NORTH LOUISIANA WILDCATS

Bossier Parish—Failure: Chas. C. Lowery-Del Cryer's Abie Levy 1, 7-19n-11w, sso in Nacatoch sd 655-80, sso Paluxy sd 2153-57, temp abnd 2311.

De Soto Parish—Failure: Chas. C. Lowery's Mary R. Crow 1, 15-11n-10w, abnd 1513.

MICHIGAN WILDCATS

Newaygo County—Failures: Mich. Consolidated Gas Co.'s State 1, nw nw nw 2-15n-11w, abnd 1343.

W. Spencer Cook's Klever 1, se se ne 35-11n-13w, abnd 2000.

Saginaw County—Failure: Clarence Wilcox's Mossner 1, se se sw 18-10n-6e, abnd 1567.

Tuscola County—Failure: E. E. Brehm's Stebbins 1, se se se 35-11n-8e, abnd 2872.

Van Buren County—Failure: Del Fortney's Gish 1, se ne ne 19-1s-14w, abnd 1320.

MISSISSIPPI WILDCAT

Wayne County—Failure: Humble's Masonite B-1, swc 21-9n-7w, abnd 8500.

MONTANA WILDCAT

Stillwater County—Failure: Billings Oil & Gas Co.'s Murray 1, 13-2n-22e, Broadview dome, abnd 3665.

OKLAHOMA WILDCATS

Caddo County—Failure: J. N. Womack's Coyle 1, ne ne ne 33-5n-12w, abnd 291.

Creek County—Failure: Hubble & Webb's Todd 1, ne ne sw 22-14n-7e, abnd 2803.

Lincoln County—Failures: R. L. Aiken et al's Kinder 1, se ne ne 5-15n-5e, abnd 4454.

Summitt Drlg.'s Bullard 1, ne nw se 26-12n-2e, abnd 5880.

Logan County—Failure: J. E. Trigg's Lambert 2, ne nw nw 26-15n-1w, abnd 5877.

Murray County—Failure: Helmerich & Payne's Sadler 1, se nw ne 29-1n-2e, abnd 3176.

Pawnee County—Failure: J. R. Porter's Potter 1, sw sw sw 24-21n-6e, abnd 3010.

WEST TEXAS WILDCAT

Irion County—Failure: Permian Royalty Co.'s Noelke 1, 330 ft out swc of e½ of w½ sect 1228, W. T. Collins sur, elev 2543, abnd 1491.

WEST TEXAS NEW PAY DISCOVERIES

Ector County—North Goldsmith Field Devonian Discovery: Stanolind's Grisham-Hunter Corp. 1, c sw sw T&P Ry. 10, blk 45, T-2-N, offsetting San Andres production, OWDD from 6499, elev 3309, base Permian 7905, Devonian 7919, flowed 445 bbls 43-gr, gas-oil ratio 1279/1, natural via ¼-in from open hole at 7919-56.

Ector County—Penwell Field Ellenburger Discovery: Phillips et al's Eisdon-Scharbauer Unit 1, 1997 snl and 1827 wel PSL 25, blk B-15, ¾ mi w by n of n end of Penwell regular Permian field, elev 2925, anhydrite 950, Yates 2140, Glorietta-Holt 4420, Devonian 7087, Silurian 7380, Fusselman 7668, Montoya 7765, Simpson 7960, McKee sand 8310, Ellenburger 8888, flowed 1065 bbls 43.5-gr, gas-oil ratio 573/1, natural via ½-in from Ellenburger perf 8920-50, td 9020, pb to 8978.

WEST CENTRAL TEXAS WILDCAT

Jones County—Failure: Sherman Hunt, Jr., trustee's Barnett 1, 1320 nsl and 990 ewl T&P Ry. 24, blk 17, elev 1755, between Wimberly and Reddin fields, abnd 2701.

NORTH TEXAS WILDCATS

Archer County—Failure: Bridwell Oil Co.'s Boone 1, 1320 ft out nwc J. S. Swisher sur A-396, abnd 1450.

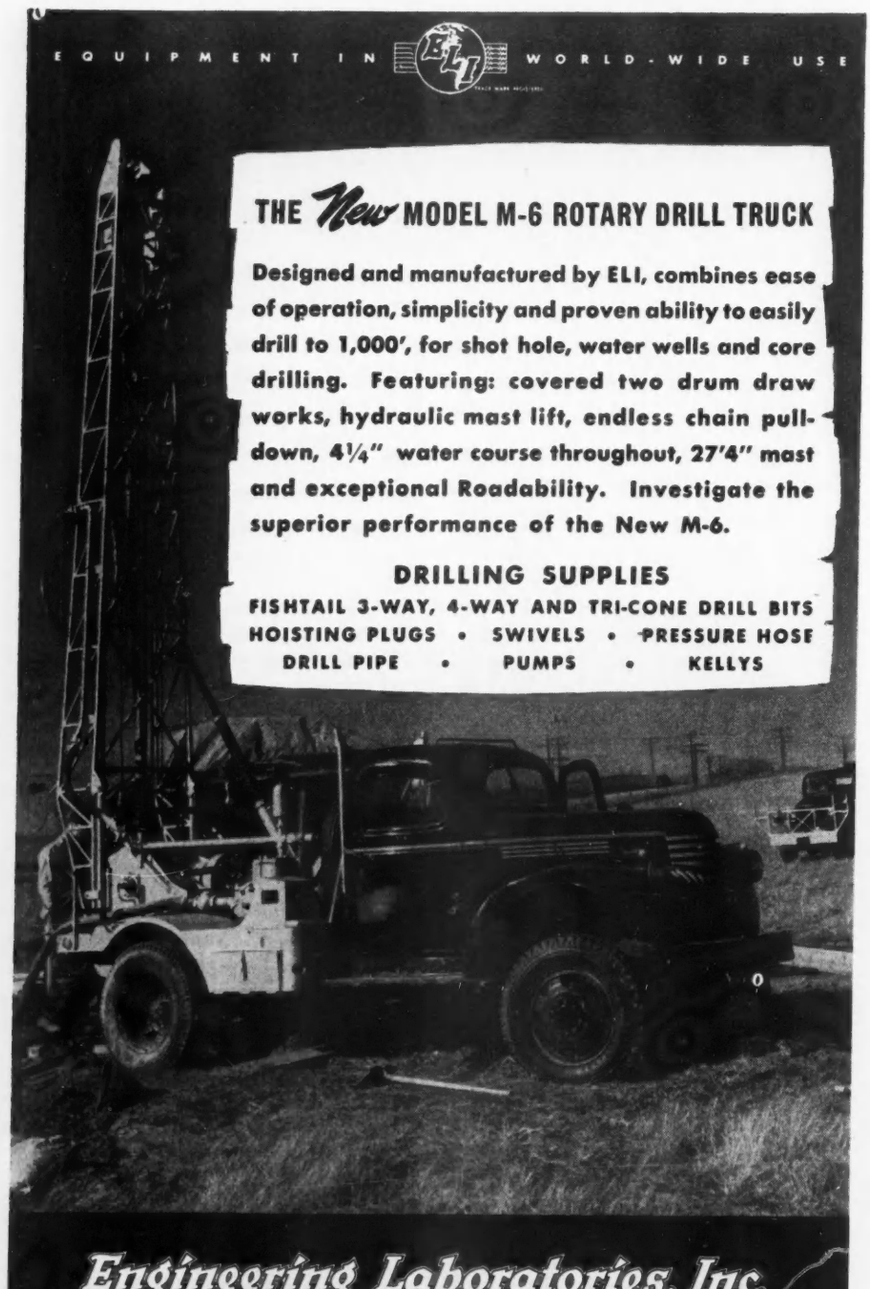
Grayson County—Junked: Denver Producing & Refining's Jewell 1, 666 ft nsl and 330 ft ewl of Wm. H. Allen sur A-15, discovery for Strawn zone in Sadler pool (OWDD), old td 8403 ft, elev 687 ft, Oil Creek saturated sand 8468-8540 ft, Ellenburger 8818 ft, td 9413 ft, pb to 8717 ft and junked.

Knox County—Failures: L. S. Youngblood and R. L. Foree's Ross Bates 1-A, sw sw sw D&W Ry. 1, blk 2, elev 1355 ft, abnd 1630.

J. W. Hastings et al's L. J. Kuhler 1, 1000 ft snl and 220 ft ewl D&W Ry. 3, blk 2, abnd 1708.

Wichita County—Failure: D. H. Bolin et al's Slaughter 1, 990 ft nsl and 480 ft ewl blk 314, Waggoner Colony Lands, abnd 3416.

Young County—Failures: Henry Craig et al's Gilbert 1, 600 ft nsl and 1230 ft wel TE&L Co. 221, abnd 983.


EQUIPMENT IN ELI WORLD-WIDE USE
THE New MODEL M-6 ROTARY DRILL TRUCK
Designed and manufactured by ELI, combines ease of operation, simplicity and proven ability to easily drill to 1,000', for shot hole, water wells and core drilling. Featuring: covered two drum draw works, hydraulic mast lift, endless chain pull-down, 4¼" water course throughout, 27'4" mast and exceptional Roadability. Investigate the superior performance of the New M-6.
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FISHTAIL 3-WAY, 4-WAY AND TRI-CONE DRILL BITS
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The OIL WEEKLY'S TRADING POST

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FOR SALE

FOR SALE

■ COMPLETE POWER RIG—A REAL BUY! Cash or Terms.

1—126′ Lee C. Moore Jackknife Derrick w/ 11 foot substructure, walks, runarounds, etc.
5500′—4½″ Range II, 16.16-lb., full hole drill pipe
1—Emsco power pump, 7¼x14 with GAK Wax, engine, new
1—6¾x14 Gardner-Denver power pump w/ XHE Hercules motor, overhauled
1—Hopper 8C Drawworks
1—XHE Hercules motor, overhauled
1—Rotary table, Emsco oil bath, R. B. completely reconditioned
1—Emsco coring unit with Lincoln motor
1—B-J 150 ton hook
1—13⅜″ SDA Cameron prevented with 13″ Cameron valve
2—Sets Baash-Ross tongs, complete, late model, all lugs up to 10¾
1—Shale shaker (Made two wells)
1—6″ GS Swivel
1—4″ Kelly, 38′ long, Eue.
1—Martin Decker Weight indicator
1—Set Baash-Ross drive bushings
2—Kohler 5 K.W. light plants
2—7x12 steel tool houses
1—2½″x55′ drilling hose

All tools, accessories to make complete rig ready for service. This rig can be inspected in my yard in Alice, Texas. Phone 619, 620 or 1169-W. **Harry B. McCartney.**

FOR SALE

50— 500 Barrels
10— 1,000 Barrels
20— 5,000 Barrels
4—10,000 Barrels

Heavy A.P.I. New closed bolted type steel tanks now located at Ogden, Utah. Can quote reasonable prices in order to move from present premises at once.

JOS. GREENSPON'S SON PIPE CORP.
National Stock Yards, St. Clair County, Ill.

■ FOR SALE OR LEASE—Late model Gravity Meter and complete automotive and surveying equipment for Gravity Field crew. Address: Box 19, c/o The Oil Weekly, Houston, Texas.

■ TD-18 Tractor with winch; TD-14 tractor with dozer and winch. Good Condition, cheap. Lee Construction Co., Foot of 75th Street, Houston. Telephone W-4125.

■ Standard Drilling Outfit, complete, A-1, steel rig. New Young 145-hp. engine, new 5000 ft. lines. $8500 or trade for Bucyrus Spudder. L. A. Bolte. Rt. No. 2, Brunswick, Ohio. W. Richfield 2423.

■ FOR SALE: Shallow lease with six wells, drilling equipment, pumping power, winch tractor, boiler, etc. Morgan Quine, 2035 College, Beaumont, Texas.

NEW CEMENT LINED PIPE

44,000 ft. 6⅝″ x .280 wall, 18.97# Lapweld, with ¼″ cement lining. Threads and protectors, less couplings. Location: Cambridge, Ohio.

HORWITZ PIPE & SUPPLY COMPANY
Tulsa, Okla.
P. O. Box 2534 **Ph. 2-9128**

GEOLOGICAL MAPS

Covering the Gulf Coast of Texas and Louisiana, showing all new discoveries and all dry holes drilled to April 15, 1946. Dry holes show well-elevations, total depths, and paleontological data. Oil fields colored green, gas fields red, sulphur purple, geophysical prospects yellow, depleted fields brown. Gulf Coast of Texas in one section size 4½ ft. by 10½ ft. Scale one inch to two miles. Price on paper $50.00, on linen $75.00. Louisiana Gulf Coast covers from T3N to the Gulf drafted in two sections, scale one inch to two miles. Hand colored the same as the Texas Gulf Coast. Size of each section 3½ ft. by 10 ft. Price of each section $25.00 on paper and $37.50 on linen.

STATEWIDE MAP COMPANY
J. 2-7304
1005 Isabelle No. 22 **Houston, Texas**

FOR SALE

■ DRILLING EQUIPMENT—2 Sullivans for diamond, core and test hole drills.

1—Star No. 28 spudder & beam machine
1—Star No. 25 spudder & beam machine
1—Leidecker No. 32 all steel, beam machine
1—Armstrong No. 50 spudder
1—Wichita No. 61 heavy duty spudder

Standard outfit, complete with 80′ steel derrick. Good used equipment. Complete stock of cable tools, prices right. S. W. PRESSEY, Pueblo, Colo.

HELP WANTED

SALES MANAGER WANTED

Young and aggressive sales manager by established oil tool manufacturer. Location Tulsa. Wonderful opportunity for right man. Give complete details in letter. Address: Box 20, c/o The Oil Weekly, Houston, Texas.

Looking for young men with experience in handling material who desire to work for large oil company in Venezuela. Please write to Frank R. King, 2705 Esperson Building, Houston 2, Texas, at once. Please furnish as much information as possible in your letter.

NOTICES

OIL PRODUCTION

wanted. Property that will make from $20,000.00 to $200,000.00 PER MONTH.

W. K. MANN OSAGE HOTEL,
Arkansas City, Kansas

■ WANTED: Operators to finance and further develop proven and semi-proven oil and gas properties in Montana.

Hamilton & Hamilton, Inc.
Box 1605, 535 Ford Bldg.
Great Falls, Montana.

Perpetually participate in coming Florida oil development by owning income producing fee mineral rights. Geologically selected, on geophysical prospects, leased to major companies, at predevelopment prices. Write Petroleum Geologist, Box 1701, Houston, Texas.

NOTICE

Mr. David A. Bennett announces that Mr. Roy M. Frisby is no longer employed by him. All matters pertaining to the oil operations of David A. Bennett and J. W. Sorrells, formerly handled by Mr. Frisby, should be referred to

BENNETT & SORRELLS
Oil Producers
232 East Ohio Street
CHICAGO 11, ILLINOIS

J. A. Chapman et al's Gilbert 1, 1200 ft out of sec TE&L Co. 221, abnd 980.

EAST TEXAS WILDCATS

McLennan County—Junked: C. F. Carter et al's S. J. King 1, 330 from sw and 900 from se lines blk 29, J. Morena sur, elev 598, jkd and abnd 2376.

Van Zandt County—Failure: V. J. Meyer and Danciger's Meredith 1, 2600 from sw and 750 from se lines R. C. Morris sur, elev 512, base Pecan 2057, Gober 2738, Woodbine 4038, Ft. Worth lime 5317, Paluxy 5866, 1st anhydrite 6668, Travis Peak 7955, abnd 8170.

SOUTH CENTRAL TEXAS WILDCAT

Maverick County—Failure: O. D. Feldman's Fee 1, 3050 fr wl 4040 fr nl sect 2, 6308.45-ac lse, abnd in Glenrose 6940.

SOUTHWEST TEXAS WILDCATS

Jim Hogg County — Failure: Killam-McLean's R. Holbein 1, 1335 fr wl 5126 fr sl 1280-ac lse, Las Animas Gr, abnd 3567.

McMullen County — Failure: Santa Clara Oil et al's Volney M. Brown et al 2-A, 467 fr n&el GH&H sur 9 on 4200-ac lse, abnd 864.

Starr County—Failure: Baldridge & King's I. Y. Garcia et al 1, 1830 fr nl 330 fr el 160-ac lse w½ porc 100, 1½ mi nw Sullivan City fld, abnd 4301.

Webb County—Failures: Houston Oil's Rosa Benavides et al 1, 330 fr s&wl blk 9, Cole subn on 665-ac lse, 3680 s sw Cole Pet. Co.'s gas well 9-B, W. Cole fld, abnd 3603.

Texas Co.'s Daniel Adami 1, 1650 fr n&wl H&GN sur 4, on 1810-ac lse, 4 mi sw Adami fld, abnd 1096.

George Buck-J. N. Abel's J. G. Garcia Est. 1, 330 fr n&el blk 2, 4940 fr wl 3301 fr nl sur 592, Oilton area, abnd 1908.

LOWER TEXAS COAST WILDCAT

Brooks County — Failure: La Gloria Corp.'s C. F. Wagenschein 1, 1650-ac lse, CCSD&RGNG sur 22, 12 mi sw Falfurrias, abnd 8503.

UPPER TEXAS COAST WILDCATS

Fayette County — Failure: Amerada's G. L. Brown et al 1, 1800 fr nl 800 fr wl 568.6-ac lse, Jacob Stiffler sur, 3½ mi n Arnim fld, abnd 4975.

Newton County — Failure: Humble's W. W. Moore, Jr. 1, 3660.6 fr sl 467 fr wl A. L. Stark sur, 970-ac tr out of 2654-ac lse, Bon Wier area, abnd 12,195.

UPPER TEXAS COAST NEW PAY TESTS

Brazoria County—Blue Lake Oil Discovery: McCarthy O&G Corp.'s Turnbull et al 1, 675 fr nl 330 fr el 160-ac lse, Geo. Robinson Lge, 3690 w of Masterson 1 well, pay 8510, perf 36 shots 8516-22, flow 233.34 bls 34.3-gr, 9/64-in, tp 1450, cp 1550 lbs, gor 640/1, td 9367.

Hardin County — W. Silsbee Oil Discovery: American Republic Corp.'s Ellery-Fee 1, 644.4 fr wl 2745.8 fr nl Ellery Lge, pay 7688, perf 20 shots 7706-10½, flow 83.81 bbls 41-gr oil, 0.2% wtr, 1/8-in, gor 1020/1, cp 2240, tp 610 lbs, td 8143, pb 7710½.

Matagorda County—Blessing Distillate Discovery: American Liberty's Dela Braden 1, (OWDD) 708.5 fr nl 768.5 fr wl lot 36, 100-ac tr, otd 8320, used as injection well for cycling plant, pb 8467, pay 8425-67, flow 200 bbls 51-gr oil, 7 mln gas, ¼-in, tp 3100 lbs, td 10,149, pb 8467.

Oil Tax for Soldiers' Bonus Opposed by Illinois Group

Members of the Illinois Oil and Gas Association appeared at a special hearing before an Illinois State Senate Commission to protest a proposed tax on oil to provide a soldiers' bonus.

The tax was recommended as high as 12 cents per barrel. The Association approved the bonus but on taxation equally distributed instead of against a few industries.

It said with increased development and operating costs thousands of wells might be abandoned prematurely, thus affecting royalty owners, farmers and general business interests throughout the state.

SITUATION WANTED

■ **Now available a Chief Engineer and Consultant with a wealth of background and experience in Research, Design and Development of drilling equipment and tools including Mud Pumps and wearing parts, Crown and Traveling Blocks, Rotaries, Swivels, etc. You have seen this engineer's accomplishments on the job at the rig. Replies held strictly confidential. Address: Box 21, c/o The Oil Weekly, Houston, Texas.**

LEASES, DRILLING, ACREAGE, ETC.

■ ASSOCIATE WANTED on 2000 acres, West Texas; Seismograph High; well recently drilled on edge produced some oil at 3000′. J. Bell, 1907 Hope St., Dallas, Texas.

WILDCAT STARTS

ARIZONA

Maricopa County: John J. Robertson et al's Whitman 2, c ne nw 33-5n-3w, 4500-ft Pennsylvanian test, sp.

CALIFORNIA

Kern County: Miller and York's Anderson 1, 20-29s-21e, Sheep Springs area, drlg.

Standard Oil's Anderson 37-17W, 17-29s-21e, Salt Creek area, lcn.

Tide Water's Frick 22-16, 16-31s-29e, Lamont area, lcn.

Tulare County: Pacific Central Oil Co.'s Finch 8, 31-23s-23e, Trico area, drlg.

Trico Oil and Gas Co.'s Pizzotti 1, 7-24s-23e, Trico area, rig up.

Los Angeles County: Seaboard's Mission Land 1-8, 25-3n-16w, Newhall area, lcn.

Orange County: Tide Water's Norris 1, 8-6s-10w, Fairview area, material.

Texas' Vejar 1, 35-3s-9w, Richfield area, lcn.

COLORADO

Pueblo County: Continental's State 1, c ne ne se 4-18s-67w, Sullivan Park dome, rig up.

Rio Blanco County: Phillips' Yellow Jacket 1, c nw se sw 1-1n-92w.

ILLINOIS

Clinton County: J .L. May's Scheafly 1, se se sw 25-2n-3w, lcn.

J. L. Gerard's Gill, se se se 18-3n-2w, drlg.

Clay County: K & B Drlg Co.'s Tfaub 1, se ne ne 13-5n-6e, lcn.

Cumberland County: Nation Oil Co.'s McMechan 1, ne se se 31-11n-10e, drlg.

Ashland O & R Co.'s Lovall 1, se se se 8-10n-7e, lcn.

Hamilton County: C. H. Nickerson's Flannigan 1, sw ne se 28-6s-5e, lcn.

Flemming & Swann's Mac Gee 1, sw ne nw 3-7s-5e, drlg.

Fayette County: C. J. Simpson's Harpster 1, nw se nw 17-5n-3e, lcn.

Jasper County: J. L. Black's Kepley 1, nw nw nw 20-5n-8e, drlg.

R. B. Martin et al's Ralf 1, nw nw se 35-6n-9e, lcn.

Montgomery County: C. R. Craft's Drew 1, sw se sw 28-9n-5w, drlg.

Randolph County: Chas. R. Larson's Wilge 1, nw nw nw 2-7s-6w, drlg.

Richland County: Walter Duncan's Hawkins 1, se se nw 3-2n-9e, drlg.

Shelby County: National Consumers Oil Co.'s Stewardson 1, sw sw ne 16-11n-4e, lcn.

The Big Four O & G's Horn 1, sw sw sw 19-12n-5e, comp.

St. Clair County: West Basin O & G Dev's Obal 1, se se sw 14-2n-8w, drlg.

INDIANA

Clay County: Jean Reagan's Luther 1, se se sw 19-10n-6w, lcn.

KANSAS

Graham County: Tom Palmer's Parker 1, sw sw sw 36-6s-21w, rur.

Ellis County: Veeder Supply et al's Richards 1, sw sw se 8-11s-18w, lcn.

Phillips County: Helmerich & Payne et al's Kinter 1, sw nw nw 20-4s-19w, sur hole.

Rooks County: Goodpasture et al's LeSage 1, se se ne 18-7s-20w, drlg.

NORTH LOUISIANA

De Soto Parish: Oakes & Tanner et al's Tolson 1, 2-13n-16w, 6500-ft or Pettit test.

MICHIGAN

Gratiot County: McClure Drilling's Peiffer 1, nw ne sw 30-10n-4w, dr.

Kalamazoo County: W. D. Gannett's Sills 1, ne ne se 30-1s-12w, dr.

Missaukee County: Pure's Bunning 1, s½ se ne 30-22n-6w, dr. L. R. Reese's Grice 1, nw se sw 20-23n-7w, lcn.

Montcalm County: Union Drilling's Robinson 1, se sw ne 16-10n-6w, dr.

MISSISSIPPI

Copiah County: Sun's Mrs. Lee Little 1, nwc 8-2n-4w, lcn.

MONTANA

Petroleum County: Dave Schrock's Clauson 1, c se ne 27-13n-28e, Rattlesnake Butte structure, rig up.

Flathead County: H. F. Poston's Wendt 1, nw se 11-28n-21w, Roger Lee structure, lcn.

Carbon County: East Elk Basin-Big Horn Basin's Brockley 1, sw ne 19-8s-25e, Warren structure, lcn.

Liberty County: Texas' Laas 2, c nw ne sw 14-33n-4e, Utopio structure, rig up.

NEW MEXICO

Eddy County: Malco Refineries, Inc.'s Byrum 1, 1953½ ft snl and 1967 ft ewl 8-20s-25e, machine for 1200-ft San Andres test.

Lea County: Repollo Oil's E. Beach 1, c sw se 25-21s-37e, lcn 6500-ft Clear Fork (Yeso) test.

OKLAHOMA

Caddo County: Nail Reed's Coyle 1-A, NE NE NE 33-5n-12w, drlg.

Cotton County: Bridwell's Houghton 1, SE NW NW 23-3s-11w, lcn.

Garfield County: J. E. Crosbie, Inc.'s Siegle 1, NE SE SW 32-23n-4w, rur.

Garvin County: Lawsen & Dixon's Freeman 1-A, NW NW NE 36-1n-1w, rur.

Haskell County: Phillips' Sammons 1, C SE NE 22-9n-21e, lcn.

Murray County: W. H. Morrow et al's Wolf 1-A, NW SE SW 8-1n-2e, drlg.

Okfuskee County: Wilcox Oil Co.'s Lewis 1, SE NE NE 24-12n-9e, mirt.

J. H. Cullian's Replogle 1, NE NW SW 5-12n-8e, lcn.

Osage County: Ryan Consolidated's Osage 1, SW SW SW 12-22n-7e, lcn.

Pottawatomie County: Atlantic's Stuart 1, SW SW SE 32-11n-3e, rur.

TEXAS PANHANDLE

Ochiltree County: Helmerich & Payne, Inc. et al's Buzzard 1, ne ne ne T&NO Ry. 69, blk 13, lcn.

WEST TEXAS

Dawson County: Ray A. Albaugh et al's J. T. Middleton-Cities Service 1, c ne ne E. L. Ry. 69, blk 8, 5000-ft San Andres test, sp and sd.

Kent County: American Liberty's Connell-Young 1, c se se H&GN Ry. 56, blk 5, 1-3/8 miles nw outpost for Polar field (Ellenburger), lcn for Ellenburger test.

Lynn County: Ray A. Albaugh et al's Grover L. Sutton-Magnolia 1, c ne se E.L.Ry. 22, blk H, lcn 5500-ft San Andres test.

Val Verde County: Chas. H. Mauer et al's J. W. Ingram 1, 2030 ft nsl and 730 ft wel E.L.RR Co. 33, blk B-S-2, 6 mi nw Shumla, 2500-ft cable test, sp and sd.

B. E. Wilson et al's Wilson-Hodge 2-a, 1139 ft ewl and 1465 ft snl GC&SF Ry. 57, blk E, lcn 2000-ft cable test.

WEST CENTRAL TEXAS

Callahan County: R. F. St. John et al's A. E. Dyer 1-A, se se nw BBB&C Ry. sec 40, lcn 2000-ft cable test.

Taylor County: West Central Dr. Co. et al's C. H. Murphree 1, se se se S.P.Ry. Co. 1, blk 9, lcn 3500-ft test.

NORTH TEXAS

Archer County: Jennings et al's J. J. Perkins 1, 330 ft out sec lot 32, sec 6, ATNCL sur, lcn 5000-ft test.

Bridwell Oil's W. Duckworth 1, 1700 ft nsl and 800 ft ewl blk 5, Harris subdvn, lcn 2000-ft rotary test.

Clay County: Gus Blakely et al's Rosco Scott 1, 750 ft nsl and 590 ft wel blk 69, Wood CSL sur, ¾ mi nw Post Oak, lcn 1200-ft rotary test.

Wayne H. Hammon et al's Raymond Wood 1, 3425 ft snl and 1400 ft wel HT&B Ry. 43, A-224, lcn 6000-ft Ellenburger test.

Cooke County: Hollandsworth Dr. Co.'s R. L. Trew 1, 2860 ft snl and 330 ft ewl 168-ac tract, M. Langham sur A-564, sd 1664.

Harvey Dr. Co. et al's J. Mitchell 1, 330 ft out of sec B. B. Lee sur A-614, lcn 2500-ft test.

Redman Bros. et al's J. V. Wheeler 1, 330 ft out sec H. Ledbetter sur A-601, lcn 3000-ft Ellenburger test.

Grayson County: Denver Producing & Refining's H. C. Rich 1, 330 ft n and e of nwc of Wm. McGill sur, but in I&GN Ry. sur, deep test, dr 300 ft.

Knox County: J. W. Hastings et als' Kuhler 1, 1000 ft snl and 220 ft ewl D&W Ry. 3, blk 2, abnd 1708.

Throckmorton County: R. Olsen Oil's M. G. Cheney-J. C. Roberts 1, 330 ft out swc TE&L Co. 1621, 4300-ft test, dr 150.

Wichita County: A. E. Blair et al's Mary Cody 1, 150 ft ewl and 250 ft nsl of tract in blk 311, Waggoner Colony Lands, lcn 2000-ft rotary test.

D. H. Bolin et al's L. B. Slaughter 2, 150 ft nsl and 330 ft wel w½ blk 315, Waggoner Colony Lands, lcn 2700-ft rotary test.

Wilbarger County: W. T. Waggoner Est.'s Fee 1-RR, 1200 ft snl and 2600 ft wel H&TC Ry. 2, blk 17, lcn 4500-ft Ellenburger test.

Young County: Henry Craig et al's E. Gilbert 2, 1630 ft wel and 1200 ft nsl TE&L Co. sec 221, lcn 1000-ft rotary test .

Timberlake & Kelleher's W. J. Bryant 1, 3669 ft s and 450 ft e of nec TE&L Co. 1369, but in Fractional Sec. 3401, lcn 1050-ft cable test.

EAST TEXAS

McLennan County: M. Koury and R. S. Hendrickson's B. G. McKie 1, 330 ft snl and 1000 ft wel 100-ac tract and M. Snell sur, 2 mi nw Eddy, lcn 2500-ft test.

EAST TEXAS BORDER COUNTIES

Harrison County: Rogers Lacy's E. Key 1, A. Crocker Sur, 14½ mi s of Marshall, ru.

SOUTH CENTRAL TEXAS

Bastrop County: C. W. Voyles' C. L. Voyles' C. L. Moncure Est. 1, 2370 fr nl 970 fr el 221-ac lse, M. Rousseau sur, Edwards lime test.

Milam County: Jas. C. Walker's D. R. Maddox 1, 330 fr s&el 65-ac lse, J. J. Acosta sur, lcn.

Caldwell County: Stanley A. Thompson's Lydia Dannelley Carvenka 1, 330 fr swl 330 fr m/sly/wl 55-ac lse, Jonathan Burleson sur, lcn.

Wilson County: Southern Minerals Corp.'s Constant Kollodzieu 1, 467 fr se&swl 430-ac lse, Louis Manchaca Gr, 6000-ft test.

SOUTHWEST TEXAS

Duval County: Chas. H. Houston-W. T. Farrier's Mucio Ruiz 1, 330 fr m/wly/nel 380 se fr interior cor in nel 346-ac lse, sur 44, 2000-ft test.

Jim Hogg County: Panhandle Ref. Co.'s Dave Gallagher 1, 330 fr s&el blk 325, Pippin sbdn 40-ac lse, El Ranado Gr, 1½ mi e Chaparosa gas fld, 4500-ft test.

McMullen County: O. D. Edwards' Annie Graves Dolph et al 1, 1650 fr nl 330 fr wl sect 27, Shumway sbdn Shiner Rch, C. Sandoval sur, 160-ac lse, 1500-ft test.

Harry Ezzell's Harry Ezzell 1-A, 330 fr wl 660 fr sl nw¼ sect 33, Ezzell Rch sbdn, S. B. Turner sur 8, 3½ mi s sw San Caja fld, 1 mi s Ezzell fld, lcn.

Webb County: Edwin S. Cox-Jake L. Hamon's Clyde C. Marshall 2, 1320 fr nel 1320 fr nwl SM&S sur 344, E. J. Foster sbdn, 1370 sw Marshall 1, dry hole, 442.4-ac lse, 3000-ft test.

Dulaney Oil Co.'s State of Texas-Sur 838-1, 990 fr sel 330 fr swl sur 838, 69.5-ac lse, 2000-ft test.

LOWER TEXAS COAST

Bee County: Bridwell's J. W. Baird 1, 330 fr s&el J. G. Rountree sur 8, and 350-ac lse, 1 mi w of Bridwell's Sliva 1, Stillwell sd oil disc, mi 4600-ft test.

Jackson County: Hewit & Dougherty's A. A. Johnson 1, 660 fr ne&sel 160-ac lse, Wm. Whitaker sur, 5000-ft test.

Jos. Hornberger, Jr.'s J. M. Bennett 1, 330 fr nwl 545 fr sel 3330 fr nel 577.6-ac lse, Valentin Garcia Gr, 1 mi sw LaSalle, 6800-ft test.

Martin Thompson's Mrs. E. H. Duenow 1, 660 fr el 330 fr sl Magnolia's 700-ac lse on 40-ac farmout, 330 fr sl 9500 fr el Geo. Wing sur, 1-2/3 mi s Lolita fld, mi.

Jim Wells County: Haynes B. Ownby Drlg. Co.'s Vicenta Gonzales 1, 1320 fr el 660 fr sl 125-ac lse, se¼ 500-ac lse, in nwc La Tinaja de Lara Gr, 1½ mi s se Amagosa gas fld, drlg wtr well, 6800-ft test.

Live Oak County: Herman Brown et al's H. Weiding 1, 330 fr n&wl sect 151, R. Triplett sur, 3½ mi n of Oakville fld, 7000-ft test.

San Patricio County: Southern Minerals Corp.'s Katherine Clifton 2, 4000 fr nwl 4500 fr nel 9412-ac lse, Jas. B. Wilson sur, 3 mi ne Clifton 1, dry hole, 5350-ft test.

UPPER TEXAS COAST

Chambers County: Jack W. Frazier's Geo. F. Wilburn Est. 1, 660 fr n&el sect 1, T&NO sur, 1617-ac lse, 9000-ft test.

Sun's Frankland 1-A, start nwc 200-ac lse, go 467 ely alg nl th 467 s at ra to lcn, Henry Barker sur, Smith Point area, 1½ mi sw Mayes fld, 10,300-ft test.

Harris County: Allaun & Richardson's F. Dopslauf 1, 781.1 fr nl 499.6 fr el 40-ac tr, WCRR sur, blk 2, sect 22, 8000-ft test.

Liberty County: General Crude's Phoenix Dev. Co. 1, start sly/swc 284-ac lse, go 2590 nly alg wl th 1347 4 at ra to lcn, se flk Hull, 7500-ft test.

Plant Discontinued

Western Refining Company has discontinued operations at its 1400-barrel daily capacity crude skimming plant at Baldridge, Texas. This plant had been in service since 1936, using crude from nearby Pecos County fields, and was processing 500 barrels daily. The owners have not announced what disposition will be made of the plant.

Sohio Awards Contract

Morris and Meredith, Inc., Houston, has been awarded a contract to drill Sohio Petroleum Company's Farmers Land & Canal Company 1, in Calcasieu Parish, South Louisiana. The contract depth is 10,500 feet.

SQUEAKS from the BULL WHEEL

Poet's Nook

A girl whose name does not
matter
Found herself getting fatter
and fatter.
She dieted so well,
She now looks like hell,
And there isn't a place you
can patter.

Encore

Although a woman seldom cares
To tell her rightful age, she dares
Proclaim from housetop and steeple
The ages of all other people.

The Woman's Way

"I want a pair of shoes that are comfortable, but at the same time they must be smart and good-looking."

"I understand perfectly, madam, large inside and small outside."

Life's Little Disappointments

He was sitting on the front porch of his Arkansas cabin and she was propped against a post facing in the other direction.

Presently he lifted his eyes to the road near by. "There goes old man Taylor's funeral procession. Guess that's about the biggest funeral procession in the history of Arkansas."

"I'd sure like to see it," said she. "Too bad I ain't facin' that way."

That's Different

The preacher expounded on the evils of gambling and the old lady in the front pew nodded agreement and intoned, "Amen!" He launched into a tirade against drinking and smoking and stealing, and all the while she nodded and repeated, "Amen, Brother!"

Then he switched to gossiping. Her face reddened, her eyes blazed with anger, and she turned to her neighbor and whispered: "Now the old goat's stopped preaching and started to meddling!"

CORE DRILLING SERVICE
to 2000 ft.
New Shot Hole Drills For Sale
ROUSE
EXPLORATION DRILLING CO.
3511 Milam Phone J 2-4377
HOUSTON, TEXAS

This Curious World

Women's styles have changed but their designs remain the same.

Most women would be more spic if they had less span.

Some men spend thousands on their sons' educations and all they ever get is a quarterback.

There is just as much horse sense around as there ever was, but sometimes it seems like the horses have it all.

Men recognize men as contemptible creatures—which is why they prefer the company of women.

America is the only place where in one generation a family can rise from plain cabin to cabin plane.

What this country needs is a good five-cent nickel.

No man was ever smart enough to pick out the best place to grow a boil.

Women Are Unreasonable

"Mandy, why did you and your husband separate? Was it a matter of December wedded to May?"

"No ma'am. It was Labor Day wedded to the Day of Rest."

Women Are Reasonable

"Liza, how can you put up with such a lazy, shiftless, good-for-nothing husband?"

"Well, ma'am, our marriage is 50-50. I makes de livin' and he makes de livin' worthwhile."

Wings on Her Heels

"Mama, can angels fly?"

"Yes, darling."

"But daddy calls nurse his little angel and she can't fly."

"No, but she will, darling."

Wasting No Time

He was just about to write his name on the hotel register when a bedbug crawled across the page.

"Well, this is the limit. I've been bitten by fleas in Missouri, mosquitoes in New Jersey, horseflies in Maine and chiggers in Texas, but this is the first place I've ever been where a bug looked over the hotel register to see the number of my room!"

Perfect Husband

"My dear," said the old millionaire, "if I have my health restored will you marry me?"

"You leave your health alone and I'll marry you."

Artful Dodger

"Have you always been successful in love?"

"Sure, I'm still single, ain't I?"

Weekly Pun

"It's raining cats and dogs outside."

"Yes, I know. I just stepped into a poodle."

Just One More

"I'll give you a fur muff for a kiss; a fur neckpiece for a hug; a fur coat for—"

"Whoa! You've gone fur enough."

"Best Bet Yet"

This reinforced disc of natural rubber has many time and money saving advantages. Reduces fire hazard—Reduces costly fishing —Cleaner tubing and floors —Making for safer working conditions—Protection to crew—Automatic action.

See Composite Catalog

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BAILER

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TYPE G

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G-Type is recommended when cleaning out or drilling by anything in the hole such as tubing, tools, etc.

FOR ADDITIONAL INFORMATION SEE
COMPOSITE CATALOG
PAGE 1903

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MEN IN THE INDUSTRY NEWS

P. F. SHANNON, manager of Imperial Oil Ltd. in Western Canada and president of the company's principal western subsidiary, Royalite Oil Company, has been transferred to New York to a new post with Standard Oil Company (New Jersey). New chief of Imperial's Western Canada exploration is **WALKER TAYLOR,** chief of Imperial's wartime Norman exploration project in the Northwest Territories (Canol). Assistant manager is now **VERNON TAYLOR,** petroleum engineer associated with Imperial and subsidiaries' operations in Turner Valley for many years. Succeeding Shannon as head of Royalite Oil Company, the No. 1 producer in Turner Valley, is **S. F. (BOB) HEARD,** for many years a vice president and production chief for that company.

P. F. Shannon

* * *

K. M. REGAN West Texas independent operator and former state senator, was elected president of the Midland Petroleum Club, recently organized to establish club quarters in one of the new buildings to be erected at Midland, Texas. **R. S. (BOB) BRENNAND, JR.,** and **J. P. GIBBONS** were chosen vice president and secretary-treasurer, respectively. The board of directors consists of the three officers and **H. A. (BERT) HEMPHILL, JOHN W. HOUSE, ROBERT L. WOOD, TOM SLOAN, RAY RHODES** and **H. J. PHILLIPS.**

* * *

O. E. GRAM, geologist for The Ohio Oil Company in the Wichita Falls district office, has resigned to join Union Production Company and United Gas Pipe Line Company, affiliated units that are to establish a district office at Wichita Falls.

* * *

C. M. PEARCE has been elected president of the Apex Drilling Company, Inc., Fort Worth concern recently incorporated with a capital stock of $50,000, having previously operated as a partnership. **W. A. PEARCE** and **J. M. PEARCE** are vice president and secretary-treasurer, respectively.

* * *

TRAVIS COGGAN, superintendent, Standard Oil Company of Cuba, was in Houston last week inspecting new oil field equipment.

* * *

LOUIS FRANKLIN, Houston independent geologist and drilling contractor, is leaving for Jerusalem, Palestine, where he is taking charge of the oil exploration program for Jordan Exploration Company, Ltd.

* * *

JOHN H. MURRELL of DeGolyer & MacNaughton, Dallas, spoke before the Student Chapter of AIME on oil developments in the Middle East.

* * *

J. R. COLEMAN, former instructor in the Department of Petroleum Engineering, University of Texas, and now chief engineer for Arctic Contractors, Fairbanks, Alaska, addressed the Petroleum Engineering classes, University of Texas, on company operations in Northern Alaska. Coleman expects to return to Alaska this spring and continue his work in connection with the drilling of several test wells in that area.

* * *

CORNELL E. JONES, formerly a major in the Army Engineers, has been named sales development manager for Caterpillar Tractor Company. Jones has served with county and state highway departments, the J. D. Adams Company, and International Harvester Company both in domestic and foreign operations. During the war he was assigned to the Peoria, Ill., industrial area, charged with procuring "Caterpillar" products for the Engineers. He takes over the duties of **KENNETH F. PARK,** recently named to the new post of engineering consultant on all matters pertaining to the earthmoving field.

Cornell E. Jones

STANLEY C. HEROLD, petroleum geologist and production engineer, has resumed his practice as consultant, with temporary headquarters at 1330 Ethel Street, Glendale, Calif. Author of two text books on reservoir performance, Herold is specializing on the various phases of reservoir geology and engineering, including well performance, increase of recovery field development and extension, economic spacing of wells, rejuvenation of wells, pressure control, secondary recovery by water or gas, conservation of gas-lift gas, control of gas cap expansion, gas injection and storage, gainful reservoir drainage, prevention of losses by drainage, control of water encroachment, waste-water injection, and operations in conservation of oil and gas resources.

Stanley C. Herold

* * *

ELLIS FRIEDEN of Austin and **GUS J. ROSENBERG** of Brownwood, Texas, have incorporated the F. & R. Oil Corporation, with a capital stock of $25,000.

* * *

JOHN W. HOUSE, West Texas division superintendent for Humble Oil & Refining Company, announced that the company and its pipe line subsidiary contributed $15,000 to aid in the erection of the Midland Memorial Hospital at Midland, Texas.

* * *

RICHARD B. McENTIRE, Topeka, Kansas, retiring chairman of the Kansas Corporation Commission, has been appointed a member of the Securities and Exchange Commission to replace **SUMNER T. PIKE.** McEntire has resigned as a member of the Corporation Commission, of which he served as counsel before being appointed chairman, and will be succeeded by **JEFF A. ROBERTSON,** who was chairman of the commission before entering the Army in 1943.

THE OIL MAN'S CALENDAR

APRIL 29–30	And May 1, Independent Petroleum Association of America, Mid-Year Meeting, Houston, Rice Hotel.
MAY 7– 8	American Gas Association, Natural Gas Dept., Cincinnati, Hotel Gibson.
7– 9	Petroleum Industry Electric Association, Annual Convention, Tulsa.
7– 9	National Association Corrosion Engineers, Kansas City, Missouri, President Hotel.
17–18	Southwestern District, Production Division, API, Spring Meeting, Shreveport, La., Washington-Youree Hotel.
23–25	National Oil Scouts and Landmen's Association, Annual Convention, Jackson, Mississippi. Hotel Heidelberg.
28–29	American Petroleum Institute, Directors' Meeting, Fort Worth, Blackstone Hotel.
JUNE 6– 7	Mid-Continent District, Production Division, API, Spring Meeting, Oklahoma City, Skirvin Hotel.
7– 8	Kentucky Oil and Gas Association, Lexington, Ky., Hotel Lafayette.
13–14	Eastern District, Production Division API, Spring Meeting, Pittsburgh, Pa., William Penn Hotel.
17	FPC Gas Hearing, Washington, D.C.
27–28	Pennsylvania Grade Crude Oil Association, Annual Meeting, Pittsburgh, William Penn Hotel.
OCT. 7–12	American Gas Association, Annual Convention, Atlantic City, N.J.
16–18	Texas Mid-Continent Oil and Gas Association, Houston, Rice Hotel.
NOV. 11–14	American Petroleum Institute, Annual Meeting, Chicago, Stevens Hotel.

GORDON JACKSON, vice president and general manager of the Eastman Instrument Company, has been appointed vice president and general manager of Eastman Oil Well Survey Company. He was graduated from the University of California at Berkeley and advanced through every phase of the company's controlled directional drilling and oil well survey work to the position of division chief engineer of the California division. In 1945 he was promoted to chief engineer. Prior to his transfer to Denver last year, he made an extensive tour of U. S. oil fields to gain an over-all viewpoint of Eastman's operations.

Gordon Jackson

* * *

COL. JAMES E. McNARY and **HAROLD O. LAFFITTE,** specialists of Standard Oil Company (New Jersey), have received the Exceptional Civilian Service Award from the Army Service Forces for their wartime services in expediting petroleum supplies to the fighting fronts. Col. McNary received the award as a special advisor to the Quartermaster General for his work in introducing and developing the first portable pipe lines in the North African campaign, special heavy drums for handling gasoline in exposed areas, and for developing a field fueling device that was used for planes, tanks and combat vehicles. Laffitte won his citation for exceptional service in expediting the unloading of tankers in invasion ports.

* * *

LT. GEN. JAMES H. DOOLITTLE, former commander-in-chief of the 8th Air Force and noted aviation expert, and **DR. JEROME C. HUNSAKER,** head of the department of mechanical and aeronautical engineering, Massachusetts Institute of Technology, were elected to the board of directors of Shell Union Oil Corporation. The date when he was elected—April 18—was exactly four years after General Doolittle had led the American airmen on the first bombing of Tokyo. With the exception of the war years, Doolittle has been connetced with Shell since 1930, when he became manager of the company's aviation department. Dr. Hunsaker has been head of the department of mechanical and aeronautical engineering at Massachusetts Institute of Technology since 1933, and for five years prior to that time, was vice president of the Goodyear-Zeppelin Corporation. From 1926-1928 he was assistant vice president of the Bell Telephone Laboratories.

* * *

M. C. FOLEY, district superintendent for Humble Pipe Line Company, Longview, retired April 19. He was honored by employes of the company at a picnic April 20. Foley was 65 years old on April 19, and served the Humble company for approximately 26 years.

* * *

GEORGE A. MUSSELMAN, former assistant division geologist in the southern division for The Carter Oil Company, has been transferred from Jackson, Miss., to Tulsa as assistant to **H. F. MOSES,** vice president in charge of exploration. **CHANNING B. SCHWARTZ,** district geologist of the Louisiana-Arkansas district, has succeeded him and **NATHAN C. SURBER,** production geologist at Jackson, has been named district geologist for the Mississippi-Alabama area.

* * *

ROBERT L. DOTT, director, and **MALCOLM OAKS,** geologist, of the Oklahoma Geological Survey, discussed the geological formations of east-central and northeastern Oklahoma at a recent meeting of the Oklahoma City Geological Society.

* * *

LT. COL. DONAHUE M. S. LANGWORTHY, former Gulf Oil Corporation employe in the Tulsa office, has been awarded the Legion of Merit for outstanding services as secretary of the Army-Navy petroleum board. Col. Langworthy expects to go on terminal leave May 1.

* * *

WILLIAM R. COX, district landman for The Texas Company in Alabama, Florida and Georgia, has resigned to join the land department of The Louisiana Land & Exploration Company at Houma, La.

* * *

J. A. WALKER has been appointed manager of the credit department of Standard Oil Company of California, succeeding **H. E. HARTLINE,** retired.

CAPTAIN V. H. WILHELM, who has been inspector of Naval Petroleum Reserves in California, has been appointed the Navy's representative on the operating committee at Elk Hills, succeeding **CAPT. H. P. STOLZ,** who has been released to enable him to return to his business in Los Angeles. **MAX C. EASTMAN** is the Navy's alternate member on the Elk Hills operating committee.

* * *

DR. W. H. TWENHOFEL, professor of geology for 29 years at Wisconsin University, and now retired as emeritus professor, was principal speaker April 26 at the Houston Geological Society review conference. Doctor Twenhofel has been president of the Paleontological Society of America and the Society of Economic Paleontologists and Mineralogists. At present he is editor of the Journal of Sedimentary Petrology.

* * *

CECIL HILLIARD, Houston oil field equipment representative, has been appointed sales representative for Cardwell Manufacturing Company, Inc., to replace **R. B. GILMOUR,** who resigned recently to form the Falco Oil Well Service of Beeville and Alice, Texas. Hilliard is now at the Wichita factory where he is becoming more thoroughly acquainted with Cardwell equipment, and expects to be back in the field about May 1. For the last nine years he has been sales representative in the Texas and Louisiana Gulf Coast for The Republic Supply Company. His sales territory will include Houston, Dallas, San Antonio, Corpus Christi, and the Rio Grande Valley.

Cecil Hilliard

SOL SMITH, formerly district engineer for Magnolia Petroleum Company on the Gulf Coast, is now chemical engineer for the Oil and Gas Division of the Railroad Commission of Texas at Austin.

* * *

LT. WORTH B. ANDREWS, JR., of Fort Worth, has returned home after serving with the 36th Division in Europe and is associated with **WORTH B. ANDREWS, SR.,** oil and mining operator of San Antonio.

Deaths

THOMAS RICHARD HANRAHAN of Houston, 65, retired southern division superintendent for Humble Pipe Line Company, died April 24. Hanrahan had spent a lifetime in the pipe line field. He came to Houston in 1919 and was employed by Humble in the Ranger field and remained with the company until he retired in July, 1945. During his 26 years with Humble he worked at nearly every job connected with pipe line operations. A brother, **R. V. HANRAHAN,** of Houston, is president of Humble Pipe Line Company.

T. R. Hanrahan

* * *

HARRY W. WILSON, 66, of Pasadena, Calif. owner of oil interests in Panola and Rusk counties, Texas, died April 18 at Henderson, Texas.

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AT YOUR SERVICE AT ALL TIMES

BOOK REVIEW

The Case Against OPA

"Why OPA Should be Ended" is a booklet containing the statements of J. Howard Pew, president of Sun Oil Company, before the House Banking and Currency Committee as a part of the presentation of The American Petroleum Institute against continued price control. "In seeking discontinuance of price controls," the author states, "the board of directors of The American Petroleum Institute believe we would not discharge our full duty if we failed to point out that such controls are seriously retarding, disrupting and strangling all enterprise to the detriment of the American people." Three principal indictments are made against the OPA in the opening pages, folowed by jabs at the agency's propagandists.

He goes further to show that those industries operating in civilian goods during 1944 produced about as much finished consumer goods as did the entire industry in 1939, thereby making it evident that with the new productive power gained through the wartime emergencies, our potential output today could be tremendous, but actually, production has fallen since February this year. Pew concludes: "Whatever the dangers of price control termination . . . and they have been grossly exaggerrated . . . they are infinitely less than the dangers inherent in continuing price control." This booklet may be obtained from Sun Oil Company, 1608 Walnut Street, Philadelphia 3.

Illinois Reservoir

"The Marine Pool, Madison County—A New Type of Oil Reservior in Illinois" is the title of a report published by the Illinois State Geological Survey, according to Dr. M. M. Leighton, chief. The producing reservoir is primarily a coral reef of Silurian age, is the first instance of oil production from this type structure in Illinois. Copies of the report may be obtained by adressing a request to the State Geological Survey, Urbana, Ill. Up to June 15, one copy is free to any resident of Illinois. The price of additional copies is 25 cents each.

Fluid Measurements

"The Flow Meter Engineering Handbook," compiled and edited by Louis Gess and R. D. Irwin, flow meter engineering department, Brown Instrument Company, division of Minneapolis-Honeywell Regulator Company, offers a concise treatment of fluid measurements, including related factors, equipment, equations and computations in terms of steam, water, oil and gas flow. The first chapter discusses principles of orifice meter measurement followed by a chapter on the orifice plate and differential connections, design details of Brown flow meters, flow approximation tables, derivations of working formula, working equations, compressibility of gasses, relationship between coefficient of discharge, viscosity of fluids and orifice calculations for steam, water, oil and gas flow.

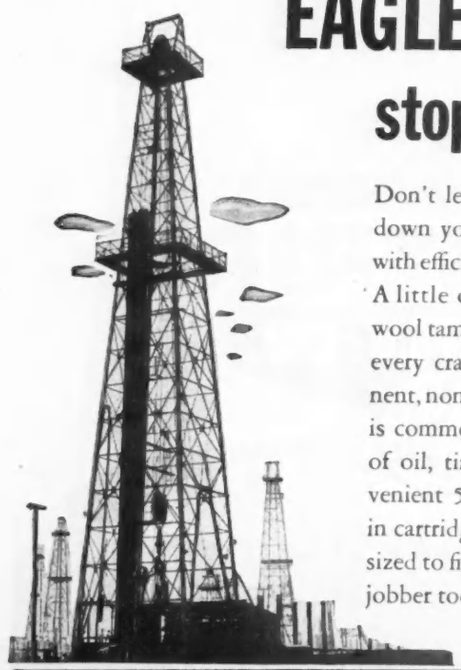
The final chapters summarize equations and nomenclature, changes for corrections in operating conditions, and volume computations. Thirty-eight figures and 55 tables are included in the book's 151 pages. Priced at $2.50, the book is available from the Brown Instrument Company, 4498 Wayne Ave., Philadelphia.

Copper Welding, Brazing

"Welding and Brazing of Copper and Copper Alloys," a 32-page handbook of procedures and materials has been published by C. E. Phillips & Company. The introductory section gives important definitions of materials and processes, accompanied by a table of compositions and properties of the most commonly welded and brazed commercial copper alloys. Suggestions for preparing various welds are made with reference to design of joints and use of jigs and fixtures. Section 2 discusses each of the common copper alloys individually.

Information includes composition, characteristics, properties of deposit, purpose for which used, application procedures, recommended uses, standard sizes, lengths and packaging. Copies may be obtained by writing C. E. Phillips & Company, 2750 Popular Stret, Detroit 8.

EAGLE LEAD WOOL
stops bottom water!



Don't let oil-wasting bottom water shut down your wells—stop it before it starts with efficient, economical Eagle Lead Wool. A little of this finely stranded metallic wool tamped into the hole effectively seals every crack and crevice, makes a permanent, non-corrosive plug. Eagle Lead Wool is common-sense prevention against loss of oil, time and money. Comes in convenient 50-pound sacks, is easy to place in cartridge-shaped Eagle Wire Containers sized to fit all casings. Order through your jobber today!

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Eagle Outlasta—for medium speed and pressure conditions.
Eagle Durable—for low speed and pressure conditions.

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Hugh H. Glen of Emsco Again Heads Petroleum Supply Group

Meeting for the first time since before the war, approximately 200 representatives of petroleum equipment supply firms from all over the United States attended the annual meeting of the Petroleum Equipment Suppliers' Association in Tulsa April 23 and 24.

Hugh H. Glen

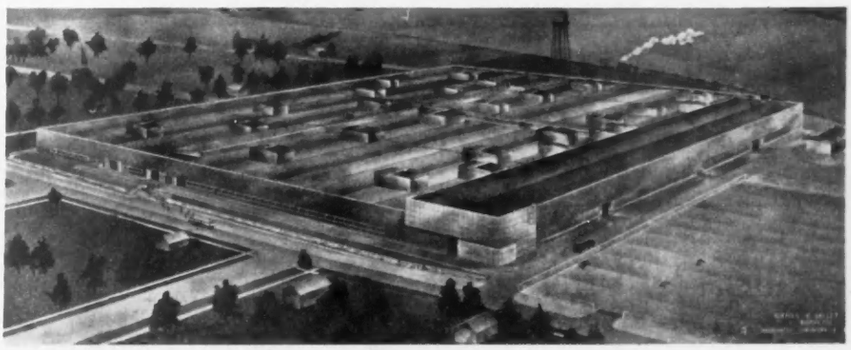
At the close of the two-day session, delegates renamed all the directors and officers of the association. Hugh H. Glen, Emsco Derrick and Equipment Company, Los Angeles, is president; A. B. Judd, Republic Supply Company, Houston, is vice president; and Wharton Weems, attorney of Houston, is association counsel and secretary.

The program included a discussion on sales accounting with John H. Lollar, Jr., Republic Supply Company, as chairman and speaker; transportation or traffic committee meeting with H. C. Witt, of Jones and Laughlin Supply Company, as chairman and speaker; sales tax committee meeting with Donald Brown, Bethlehem Supply Company, as chairman and speaker, and a discussion on personnel and labor relations with Thomas M. Mobley, Hughes Tool Company, as chairman.

Houston Firm Formed

Paul A. Condit and Frank M. Esch have formed a partnership, the Frank M. Esch Company, with offices in Houston. The company was originally formed in 1931 and served as manufacturer's district engineers for sereval accounts specializing in products for oil fields, process industries and industrial plants. The company will continue to function in the same capacity. Condit, an electrical engineer, has had more than 14 years experience in the oil business.

Caterpillar Embarks on Expansion Program



The Caterpillar Tractor Company has announced the largest expansion program in its history, a program that will enlarge the floor area of the Peoria plant by 50 percent, or by about 41 acres. A new factory for the manufacture of diesel engines is the major project, requiring 925,000 square feet of floor space. Among the other construction projects involved in the expansion program are 400,000 square feet expansion of present tractor manufacturing facilities, a 150,000-square-foot area addition to the parts department buildings, two buildings totaling nearly 90,000 square feet for additional heat-treating, a new metallurgical laboratory and a centrally located building containing 200,000 square feet for maintenance of the entire plant.

Republic Completes First Unit Of Houston Store and Warehouse

Republic Supply Company last week announced completion of the first unit of its new modern supply store and warehouse at 501 North Greenwood, Houston.

"We are now prepared to provide the last word in modern oil industry supply service," said A. B. Judd, vice president and general manager of the company.

Republic has expanded since 1910 and today maintains 45 sales and service points throughout Arkansas, Illinois, Indiana, Kansas, Louisiana, Mississippi, New Mexico, Oklahoma and Texas.

From these points, Republic stocks and sells the products of all leading oil equipment manufacturers.

Republic Supply Company is a wholly owned subsidiary of the Republic Steel Corporation of Cleveland.

In addition to the 1200 oil men and oil equipment manufacturers who attended the formal opening of the new supply store and warehouse, C. M. White, president of the Republic Steel Corporation, and ten other officials of the corporation came to Houston for the opening.

John A. Zublin Is Organizer Of New Turbine Bit Company

John A. Zublin, inventor of the Simplex and Differential drilling bits and founder of Universal Engineering Company, announces the formation of the Turbine Bit Company, specializing in horizontal drilling.

The company will operate principally in California and will make horizontal drilling available to oil producing operators with a complete field service including engineering, special instruction in the method, and active assistance to drilling crews. Zublin has leased his Universal Engineering plant to three of his associates who will continue operation of that organization. The new firm has been located at the same plant, but will function as a separate organization. Perry K. Robinson has been placed in charge of field services and will supervise horizontal drilling and instruct drillers in practical application.

Grizzly Completes New California Plant

The Grizzly Manufacturing Company has expanded its plant capacity in the East and the West. The new plant at Bell, Calif., shown above, is in full brake block production, and two new additions have been finished at Paulding, Ohio. The Ohio plant just completed covers 15,000 square feet and will be devoted to the manufacture of heavy duty brake blocks of half inch and greater.

Clamps Line Bought by New Deal Specialty from Western Supply

The New Deal Specialty Company, Inc., Okmulgee, Okla., has purchased from Western Supply Company three wire-line clamps, together with their stock of parts and dies, gigs, patterns and other necessary forms for all sizes and models. New Deal will manufacture the entire line of clamps, which will be sold through supply stores and export agents, and will continue to manufacture and market the Butler line of compound wire line drilling clamps, casing and tubing elevators, spiders, New Deal pipe cleaning machines and pipe straightening machines.

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MANUFACTURERS' NOTES

Geophoto Services Formed by Ex-Servicemen

Geophoto Services, Inc., Denver, has been organized by four former Navy photographic officers, who are offering detailed global analyses of aerial photographs with respect to surface indications of favorable subsurface formations. Such an analysis is based on years of experience in geological exploitation and the latest methods of photographic interpretation developed by the Navy during the last war. The firm has made arrangements with leading aerial photographing concerns throughout the country to make the required surveys on a regular contract basis. The same founders have also formed the Mountain States Exploration Drilling Company, specializing in drilling water wells, but will also contract for core drilling programs, shot holes, etc.

Members of the firm, left to right, are: John C. Herman III, vice president; V. Zay Smith, president; Laurence Brundall, vice president; Adam R. Wason, secretary-treasurer.

Nowery J. Smith Firm Purchases Rogers Galvanizing Facilities

The Nowery J. Smith Company, manufacturer of steel tanks and vessels and "panelbilt" buildings for industry, has purchased the Houston plant and facilities of Rogers Galvanizing Company.

The plant is on the Hempstead Highway at Eureka Street on a two-acre tract of land adjoining the 22-acre site now occupied by Nowery J. Smith Company. Actual operation of the Rogers plant and facilities will be assumed by the new owners May 1.

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